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Test Booklet Series

**C**

# TEST-30

## TEST BOOKLET

## GENERAL STUDIES (P) 2022 – Test – 3499

**Time Allowed: Two Hours** **Maximum Marks: 200**

## INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET DOES **NOT** HAVE ANY UNPRINTED OR TURN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.

2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C** OR **D** AS THE CASE MAY BE IN THE APPROPRIATE PLACE IN THE ANSWER SHEET.

3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. **Do NOT** write anything else on the Test Booklet.

4. This Test Booklet contains **100** items (Questions). Each item is printed in **English.** Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response with you consider the best. In any case, choose **ONLY ONE** response for each item.

5. You have to mark all your responses ONLY on the separate Answer Sheet provided. See direction in the answers sheet.

6. All items carry equal marks. Attempt all items. Your total marks will depend only on the number of **correct responses** marked by you in the answer sheet. For **every incorrect** response **1/3rd of the allotted marks** will be deducted.

7. Before you proceed to mark in the Answer sheet the response to various items in the Test booklet, you have to fill in some particulars in the answer sheets as per instruction sent to you with your Admission Certificate.

8. After you have completed filling in all responses on the answer sheet and the examination has concluded, you should hand over to Invigilator only the answer sheet. You are permitted to take away with you the Test Booklet.

9. Sheet for rough work are appended in the Test Booklet at the end.

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ASKED TO DO SO**

**1.** Consider the following events/movements that occurred around the time of the Non-Cooperation movement:

1. Alluri Sitaram Raju led the tribals in Andhra and combined their demands with those of the Non-Cooperation Movement.
2. Motilal Tejawat led the Bhil movement and strengthened the non-cooperation activities.
3. Swami Vishwanand organized the coal miners of the Raniganj-Jharia belt for the Non-Cooperation Movement.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**2.** Consider the following statements with respect to External Commercial Borrowings (ECBs):

1. Trade Credits beyond 3 years are considered as ECBs.
2. Issuance of any type of guarantee by Indian banks relating to ECB is not permitted.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**3.** Consider the following statements regarding the Living Root Bridges also called jingkieng jri:

1. It is found in all the northeastern states of India.
2. It is formed by guiding the pliable roots of the rubber fig tree.
3. It was accorded the UNESCO World Heritage Site tag in 2020.

Which of the statements given above is/are correct?

(a) 1 and 3 only
(b) 2 only
(c) 3 only
(d) 1, 2 and 3

**4.** With reference to India's State of Forest Report 2021, consider the following statements:

1. The total forest cover (TFC) of India increased between 2019 and 2021.
2. All the northeastern states of India have lost forest cover between 2019 and 2021.
3. The northeastern states of India account for one-third of India's total forest cover.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 only
(c) 3 only
(d) 1, 2 and 3

**5.** The term, Uniform Civil Code is present in which part of the Constitution of India?

(a) Part III
(b) Part IV
(c) Part IV-A
(d) It is not present in the Constitution

**6.** With reference to the Gross Environment Product (GEP), consider the following statements:

1. It indicates the overall health of the environment and monetizes the loss of biodiversity and other environmental factors.
2. Unlike Green GDP, GEP is obtained after deducting the damage to the environment from the total production of the state.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**7.** Recently, the Maharashtra government has launched a state-wide awareness campaign to reassert its demand for granting Marathi language classical status. In this context, which of the following criteria prescribed by the government for declaring a language as a classical language is/are correct?

1. High antiquity of the language's early texts/recorded history over a period of 1500-2000 years.
2. A rich collection of ancient literature/texts, which are considered a valuable heritage by generations of speakers.
3. The literary tradition be original and not borrowed from another speech community

Select the correct answer using the code given below.

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

**8.** Consider the following pairs:

| ***Indian Literature*** | | ***Written/compiled during*** |
|---|---|---|
| 1. Manusmriti | : | Vedic period |
| 2. Gathasattasai | : | Satavahanas |
| 3. Amarakosa | : | Gupta period |

Which of the pairs given above are correctly matched?

(a) 1 and 3 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

**9.** Which one of the following Indian states have released the first-of-its-kind state-level bird atlas in India?

(a) Tamil Nadu
(b) Kerala
(c) Maharashtra
(d) West Bengal

**10.** Which of the following statements are correct with respect to the influence of Islam with reference to syncretism in Indian music:

1. Turkish rulers introduced musical instruments like Rabab and Sarangi.
2. The famous musical work 'Rag Darpan' was translated into Persian during the regime of Firoz Shah Tughlaq.
3. The sufi practice of 'Sama' was instrumental in the promotion of music.

Select the correct answer using the code given below.

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**11.** With reference to the Keshvananda Bharti judgement where the Supreme court (SC) outlined the basic structure of the Constitution of India, consider the following statements:

1. The case was heard by the largest ever bench formed in the Supreme Court (SC).
2. It held that the amending powers and legislative powers of Parliament were different.
3. It held that the Preamble is a part of the Constitution and hence amendable.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 only
(c) 3 only
(d) 1, 2 and 3

**12.** In the context of the system of proportional taxation, consider the following statements:

1. A proportional tax levied on individuals is different for different income levels.
2. The Average Tax Rate is more than the Marginal Tax Rate in a Proportional Taxation system.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**13.** Consider the following pairs:

| ***Socio-religious reform movements*** | ***Founded by*** |
|---|---|
| 1. Seva Sadan | Shiv Narayan Agnihotri |
| 2. Dev Samaj | Behramji M. Malabari |
| 3. Dharma Sabha | Radhakant Deb |
| 4. Radhaswami movement | Shiv Dayal Singh |

Which of the pairs given above are correctly matched?

(a) 1 and 2 only
(b) 3 and 4 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

**14.** In the context of recent defense developments in India, HANSA-NG is a/an

(a) indigenous submarine
(b) aircraft
(c) torpedo
(d) unmanned aerial vehicle

**15.** Consider the following statements regarding vocational skills development in India:

1. National Education Policy 2020 targets at least 50 percent of schools to get vocational education by 2025.
2. Jan Shikshan Sansthan Scheme aims to provide vocational skills to non-literates.
3. Pradhan Mantri Kaushal Vikas Yojana provided vocational training to migrant laborers affected by COVID-19.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

**16.** Consider the following statements regarding human digestive system:

1. Inner lining of stomach secretes Hydrochloric acid.
2. Small intestine is longer than the large intestine.
3. Large intestine absorbs water and salts from undigested food.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

**17.** Consider the following pairs:

| ***Term*** | | ***Meaning*** |
|---|---|---|
| 1. Jotedars | **:** | Sharecroppers |
| 2. Adhiyars | **:** | rich ryots and village headmen |
| 3. Pottahs | **:** | deeds of contract |

Which of the pairs given above is/are correctly matched?

(a) 1, 2 and 3
(b) 1 and 2 only
(c) 3 only
(d) 2 and 3 only

**18.** Which of the following statements regarding the introduction of private member's bill in the House of Parliament:

1. One month's notice is required for its introduction in the house.
2. It is generally introduced and discussed on Fridays.
3. A member cannot introduce more than four bills in the session.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

**19.** Consider the following statements with reference to recent developments in digital payment systems:

1. Digisaathi is an RBI-launched 24x7 Helpline to address the queries of digital payment users.
2. UPI123Pay is a payment method for feature phone (traditional mobile phone) users launched by the National Payments Corporation of India in collaboration with BSNL (Bharat Sanchar Nigam Limited).

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**20.** With reference to the wood-based textile fibers, consider the following statements:

1. Lyocell fibers are modern wood-based textile fibers that have properties like viscose and polyester.
2. Unlike rayon made by the viscose process, lyocell production does not use harmful carbon disulfide.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**21.** Consider the following statements:

1. National Small Savings Fund is administered by the Department of Financial Services of Finance ministry.
2. Central Economic Intelligence Bureau functions under the administrative control of the Department of Revenue.
3. Matters relating to Central Government's disinvestment in PSUs are dealt with by the Department of Economic Affairs.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) 1 and 3 only
(d) 2 and 3 only

**22.** Indian researchers have recently developed high-quality transparent ceramics for the first time in India. In this context, consider the following statements regarding Transparent Ceramics :

1. The mineral spinel is used in the manufacture of transparent ceramics.
2. Transparent ceramics find applications in thermal imaging such as helmets and goggles.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**23.** Which of the following pollutants/ metereological parameters are monitored under SAFAR-India (System of Air Quality and Weather Forecasting And Research)?

1. Particulate Matter (PM) 2.5
2. Rainfall
3. Ozone
4. Non-methane hydrocarbons (NMHC)
5. UV Radiation
6. Wind direction

Select the correct answer using the code given below.

(a) 1, 4 and 6 only
(b) 1, 3, 4, 5 and 6 only
(c) 2, 3 and 5 only
(d) 1, 2, 3, 4, 5 and 6

**24.** Consider the following pairs of events and Governor-General of British India associated with these:

| ***Event*** | | ***Governor-general*** |
|---|---|---|
| 1. Annexation of Sindh | : | Lord Ellenborough |
| 2. Treaty of Lahore | : | Lord Auckland |
| 3. First Anglo-Afghan War | : | Lord Hardinge I |

Which of the pairs given above is/are correctly matched?

(a) 1 and 2 only
(b) 1 only
(c) 2 and 3 only
(d) 3 only

**25.** Consider the following statements regarding the Declaration on Forests and Land Use:

1. It was adopted during the United Nations Convention to Combat Desertification (UNCCD COP 14), 2019 held in India.
2. It is committed to halting and reversing forest loss and land degradation by 2030.
3. India is a signatory to the declaration.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 only
(c) 3 only
(d) 1, 2 and 3

**26.** Consider the following statements regarding the Inter-State Council in India:

1. It is a permanent constitutional body.
2. It is set up by the Prime Minister of India.
3. It aims to inquire into and advise upon disputes which may have arisen between States.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 3 only
(d) 2 and 3 only

**27.** Bharitalasuchus tapani, recently seen in the news, is a/an:

(a) extinct carnivorous reptile
(b) microbes thriving in volcanic vents
(c) edible variety of mushrooms
(d) old caves found in North East region of India

**28.** In the context of the latest technological developments, the term 'Metamaterial' is often seen in the news. It refers to

(a) artificially structured materials which can used to control and manipulate physical phenomenon like light.
(b) volcanic material whose properties cannot be harnessed with the current level of technology.
(c) materials that exhibits unique properties only in outer space.
(d) substances which can frequently change their state from solid to gas and back to solid within a narrow range of temperature variations.

**29.** With reference to the Plastic Waste Management Amendment Rules, 2021, manufacturing of which of the following single-use plastic commodities shall be prohibited with effect from the 1st July 2022?

1. Earbuds with plastic sticks
2. Ice-cream sticks
3. Plastic or PVC banners less than 100 micron
4. Polystyrene (thermocol) for decoration

Select the correct answer using the code given below.

(a) 1 only
(b) 1 and 2 only
(c) 4 only
(d) 1, 2, 3 and 4

**30.** In the context of biotechnology, ZFN and TALEN are related to

(a) banned cloning technologies
(b) vaccine-producing techniques
(c) gene editing technologies
(d) artificial reproductive technologies


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**31.** Consider the following statements regarding Harsha:

1. Administration at the time of Harsha was well centralized and law order was well maintained as it was during the Maurya administration.
2. He convened an assembly at Kannauj to widely publicize the theravada form of Buddhism.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**32.** With reference to the International System of Units (SI), Which of the following are base SI units?

1. Centimetre
2. Candela
3. Mole
4. Fahrenheit
5. Ampere

Select the correct answer using the code given below.

(a) 2, 3 and 4 only
(b) 1, 3, 4 and 5 only
(c) 1, 2 and 5 only
(d) 2, 3 and 5 only

**33.** With reference to Fatehpur Sikri, consider the following statements:

1. Panch Mahal is a five-storied grand structure located in Agra.
2. It is included in Taz Trapezium Zone.
3. Buland Darwaza is built in the style of a double-dome portal.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

**34.** Consider the following statements about the National Commission for Safai Karamcharis (NCSK):

1. It is set up under the Ministry of Social Justice and Empowerment.
2. The tenure of its chairperson and members is fixed at two years.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**35.** Recently seen in the news HARBINGER-2021 is related to:

(a) Agenda of G20's Troika group aiming economic stability
(b) Maiden Military exercise of the Taliban led Afghanistan and China
(c) Global Hackathon aiming at accessible digital payments
(d) Robot developed by DRDO to counter Drone attacks on Indian borders

**36.** Which of the following temples is/are situated in Aihole?

1. Lad Khan temple
2. Megudi Jain temple
3. Ravanphadi Cave Temple

Select the correct answer using the code given below.

(a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

**37.** Vinayak Damodar Savarkar was associated with which of the following organisations?

1. India House
2. Free India Society
3. Indian National Congress

Select the correct answer using the code given below.

(a) 1 only
(b) 1 and 2 only
(c) 1, 2 and 3
(d) 2 only

**38.** Which among the following monuments was built earliest?

(a) Purana Qila Delhi
(b) Humayun Tomb
(c) Agra Fort
(d) Charminar

**39.** Consider the following statements with reference to the lower courts in India:

1. The Munsiff's Courts are Civil Courts whose jurisdiction is determined by high courts.
2. Subordinate judges have got unlimited pecuniary jurisdiction over civil suits.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**40.** Which one of the following is ***not*** a part of the Scorpene-class submarines (built under Project-75) in India?

(a) INS Vela
(b) INS Khanderi
(c) INS Vagir
(d) INS Vasant

**41.** Consider the following pairs:

| **City** | | **River** |
|---|---|---|
| 1. Ludhiana | : | Beas |
| 2. Rajahmundry | : | Krishna |
| 3. Dibrugarh | : | Brahmaputra |
| 4. Kota | : | Chambal |

Which of the pairs given above are correctly matched?

(a) 1 and 3 only
(b) 2 and 4 only
(c) 3 and 4 only
(d) 1 and 2 only

**42.** Which of the following may be considered as the impacts of climate change?

1. The increased capacity of oceans to absorb carbon dioxide from the atmosphere.
2. Warming of the Arctic region at more than twice the rate than the rest of the world.
3. Occurrence of wildfires in Siberia.

Select the correct answer using the code given below.

(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 only
(d) 1, 2 and 3

**43.** Consider the following statements with reference to BBIN (Bangladesh, Bhutan, India, Nepal (BBIN) Initiative:

1. The initiative was proposed and signed at the annual meetings of the BIMSTEC to promote connectivity (motor vehicles agreement) in South Asia.
2. Recently, the parliament of Bhutan approved its willingness to join BBIN.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**44.** Consider the following statements with reference to the enrichment of Uranium:

1. Uranium enrichment refers to increasing the percentage of U-238 (the fissile isotope) through the process of isotope separation.
2. Weapons-grade Uranium has to be enriched to a maximum of 20 percent of the fissile isotope.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**45.** Consider the following statements with regards to the election of deputy speaker in Lok Sabha:

1. He is elected by the Lok Sabha itself from amongst its members.
2. The date of election of the Deputy Speaker is fixed by the Speaker.
3. The election should be held within six months after the election of speaker.

Which of the statements given above is/are correct?

(a) 1 and 3 only
(b) 1 and 2 only
(c) 2 only
(d) 1, 2 and 3

**46.** Consider the following statements about Formic Acid:

1. It is used as a livestock feed preservative and anti-bacterial agent.
2. Honey bee venom contains Formic acid.
3. Formic acid is insoluble in water.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

**47.** Bullion Trade in India Report, which was recently in the news, is published by:

(a) International Monetary Fund
(b) World Gold Council
(c) NITI Aayog
(d) International Institute of Gold and Diamonds

**48.** Arrange the following events in chronological order of their occurrences starting from the earliest time:

1. Declaration of Goa as the Portuguese headquarters
2. Arrival of William Hawkins at Mughal emperor "Jahangir" court
3. Capture of Daman by the Portuguese

Select the correct answer using the code given below.

(a) 1-3-2
(b) 3-2-1
(c) 1-2-3
(d) 3-1-2

**49.** Recently, Russia has been accused of having violated the Geneva Conventions. In this context, consider the following statements with reference to the Geneva Conventions:

1. Geneva Conventions were signed exclusively between NATO on one side and Russia on the other.
2. The conventions are related to the ethical and legal international standards for the humanitarian treatment of both war-affected soldiers and civilians.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**50.** Consider the following:

| *Term* | | *Meaning* |
|---|---|---|
| 1. Gahapati | : | Master or Head of household |
| 2. Agrahara | : | Land granted to Brahmana |
| 3. Gomat | : | War in Rigvedic period for cows |

Which of the pairs given above is/are correctly matched?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 only
(d) 2 only

**51.** With reference to the medieval history of India, which of the following was/were features of the administration of the Marathas?

1. The administration was based on a centralized concept of kingship which penetrated even through the lower levels of administration.
2. The Marathas did make efforts to strengthen their naval power.
3. The concept of 'Ashtpradhan' was first introduced during the reign of the Marathas.

Select the correct answer using the code given below.

(a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) None

**52.** Consider the following statements regarding Ecological Pyramids:

1. The Pyramid of Numbers is always upright.
2. The Pyramid of Biomass may be inverted in certain aquatic ecosystems.
3. The Pyramid of Energy accurately reflects the laws of thermodynamics.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

**53.** Which of the following provisions is/are mentioned in the Concurrent List of Seventh Schedule of Indian Constitution?

1. Bankruptcy and Insolvency
2. Criminal procedure, including all matters included in the Code of Criminal Procedure
3. Regulation of mines and mineral development
4. Organization of the High Courts
5. Regulation and development of inter-State rivers and river valleys

Select the correct answer using the code given below.

(a) 3, 4 and 5 only
(b) 1, 3 and 4 only
(c) 1 and 2 only
(d) 3 only

**54.** Which of the following best describes WTO's MFN (Most Favoured Nation) principle?

(a) MFN principle states that imported and locally produced goods should be treated equally after foreign goods have entered the market.
(b) Nations should treat all trade partners equally without any bias.
(c) Among all trade partners, the country recognised as the Most Favoured Nation should be favoured.
(d) Countries with MFN status should have a Free Trade Agreement.

**55.** Consider the following statements with reference to Gallium Nitride (GaN):

1. It is a mechanically stable and hard semiconductor.
2. GaN can show higher electron mobility and lower thermal conductivity than silicon-based devices.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**56.** With reference to WTO Subsidy Boxes, consider the following statements:

1. All domestic support measures considered to distort trade fall under Amber Box.
2. India's Public Distribution System (PDS) comes under Green Box.
3. Special and Differential Treatment Box Subsidies can be given only by developed countries.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1 only

**57.** With reference to plea bargaining, consider the following statements:

1. It refers to a person charged with a criminal offence negotiating with the prosecution for a lesser punishment than what is provided in law by pleading guilty to a less serious offence
2. It is applicable to private complaints of which a criminal court has taken cognisance.
3. In India it is not applicable for cases that involve offences committed against a woman or a child below the age of 14.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 and 3 only
(c) 3 only
(d) 1, 2 and 3

**58.** Consider the following statements:

1. In India, paintings, and sculptures are excluded from the definition of Capital Assets.
2. For the purpose of computation of Long Term Capital Gains tax, all capital assets held for more than 12 months are considered as Long term capital.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**59.** Consider the following statements regarding the Ventilation Index:

1. It is a measure of the volumetric rate of wind transporting air horizontally.
2. A higher ventilation index means higher visibility risk.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**60.** With reference to species interaction, consider the following pairs:

| *Type of Interaction* | *Example* |
|---|---|
| 1. Commensalism | Releasing chemical substances by the black walnut tree that suppresses the growth of other plants near it |
| 2. Amensalism | An epiphytic plant growing on the trunk of a tree |
| 3. Mutualism | The nitrogen-fixing bacteria Rhizobium found in the root nodules of leguminous plants |

Which of the pairs given above is/are correctly matched?

(a) 1 and 2 only
(b) 2 only
(c) 3 only
(d) 1, 2 and 3

**61.** Consider the following statements with respect to Government Securities (G-Sec):

1. Cash Management Bills are issued for maturities less than 91 days.
2. Buyers of Government Securities are prohibited from using G-Secs as collateral for borrowing funds in the repo market.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**62.** Imposition of Pigovian Tax leads to:

1. Reduced Consumer surplus
2. Discourages negative production externalities
3. Decreased consumption of sin goods

Select the correct answer from the code given below.

(a) 2 and 3 only
(b) 1, 2 and 3
(c) 2 only
(d) 1 only

**63.** Which of the following countries share border with Ukraine?

1. Romania
2. Poland
3. Belarus
4. Serbia
5. Hungary

Select the correct answer using the code given below.

(a) 2 and 3 only
(b) 1, 4 and 5 only
(c) 1, 2, 3 and 5 only
(d) 1, 2, 3, 4 and 5

**64.** With reference to the Parliament of India, 'Rule of Lapse' refers to

(a) adjournment of the house by the presiding officer due to lack of quorum.
(b) a condition when a bill pending in Lok Sabha lapses due to dissolution of the Lok Sabha.
(c) dissolution of Lok Sabha due to passage of No-Confidence Motion.
(d) returning of unspent granted money to the Consolidated Fund of India at the end of financial year.

**65.** Consider the following statements:

1. Sand storms are usually caused by thunderstorms.
2. Sand storms can cause drop in the surface temperature immediately after their occurrence

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**66.** Consider the following statements regarding the Right to Recall in India:

1. It is an example of the instrument of direct democracy.
2. It is available to the citizens only to recall the members of the State Legislative Assembly and not the Lok Sabha.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**67.** Which of the following statements are correct with reference to the hill stations during British India?

1. Shimla was founded during the course of the Gurkha War.
2. Anglo-Maratha War led to British interest in Mount Abu.
3. Darjeeling was taken away from the rulers of Sikkim.

Select the correct answer using the code given below.

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**68.** Consider the following passage:

It is an intermediate type of climate having features of both maritime and continental climates. It is found only in the Northern hemisphere. This type of climate has cold, dry winters and warm, wet summers. The cool temperate forest is the predominant vegetation found in this type of climate.

Which of the following types of climate is being described in the above passage?

(a) Mediterranean type of climate
(b) Laurentian type of climate
(c) British type of climate
(d) China type of climate

**69.** Which of the following is/are regulated by the Reserve Bank of India (RBI)?

1. Venture Capital Funds
2. Nidhi Companies
3. Merchant Banking Companies
4. Housing Finance Companies

Select the correct answer using the code given below.

(a) 1 and 3 only
(b) 1, 2 and 4 only
(c) 4 only
(d) 2 and 3 only

**70.** Consider the following statements:

1. He was a Turkish slave who had risen to higher ranks in the army of Shahabuddin Muhammad.
2. He reconquered both Badayun and Farukhabad.
3. For his generosity, he was known as "Lakh Baksh".

Which of the following rulers has been described in the statements given above?

(a) Shams al-dīn Iltutmish
(b) Muizud din Bahram
(c) Ghiyasud din Balban
(d) Qutubuddin Aibak

**71.** Recently, seen in the news, Karakattam is a/an

(a) traditional dance form that is famous in Tamil Nadu and Kerala.
(b) agricultural festival popular in Karnataka and Telangana.
(c) UNESCO-recognized form of music popular in Andhra Pradesh.
(d) traditional bull fighting famous in Tamil Nadu.

**72.** "This spices crop is widely cultivated in the tropics. This crop thrives in temperatures ranging between 20 to 30 degrees Celsius. The soil has to be clayey, though well-drained sandy soil is an option. It cannot stand water stagnation or alkalinity. India has the honor of producing nearly all of the world's crop."

Which of the following crops is being defined in the passage given above?

(a) Garlic
(b) Pepper
(c) Ginger
(d) Turmeric

**73.** A European traveler visited India during the 17th century. He was also a doctor, political philosopher, and historian. He was appointed as physician to the eldest son of Emperor Shah Jahan. He also described India as the "sink of gold and silver".

Who among the following travelers is being referred to in the above passage?

(a) Jean-Baptiste Tavernier
(b) Afanasii Nikitich Nikitin
(c) Francois Bernier
(d) Nicolo Conti

**74.** This is the second-largest water body in Delhi-NCR after the Yamuna. This lake is largely filled with sewage from Gurugram and the surrounding villages of Delhi. Once spread over 226 sq km, the water body straddling Delhi and Gurugram has shrunk to just seven sq km due to rampant encroachment. The Centre has decided to notify it as a transboundary wetland.

Which one of the following water bodies is best described in the passage given above?

(a) Damdama Lake
(b) Surajkund
(c) Najafgarh Lake
(d) Bhalswa horseshoe lake

**75.** Chintamani Padya Natakam was recently seen in the news in the context of the Andhra Pradesh government banning it. This play is based on the theme of:

(a) the military expeditions and exploits of a Kakatiya king.
(b) a courtesan Chintamani and a devotee of Lord Krishna, who finds salvation by singing bhajans.
(c) romantic narratives of a king of Satavahana dynasty.
(d) of conflict between the Kaivarta peasants and the Pala prince Rampala, resulting in the latter's victory.

**76.** To recognize the women scientists and entrepreneurs' contribution, the government has instituted India National Tech Excellence Award for Women 2022. In this context consider the following statements :

1. India National Tech Excellence Award is instituted by NITI Aayog.
2. It is awarded to only women who are below 30 years of age.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**77.** Ministry of Coal has recently set up Mission Coking Coal to evolve a road map for meeting India's coking coal requirements. In this context, consider the following statements:

1. India imports most of its coking coal from Australia.
2. In terms of value, the imports of coking coal are more than non-coking coal by India.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**78.** In the context of the co-lending model, consider the following statements:

1. The banks under the co-lending model are permitted to co-lend with both NBFCs as well as Housing Finance Corporations.
2. The lending bank acts as the single point of interface for the borrowers.
3. Under the model, a minimum of 50 percent of the credit risk by way of direct exposure shall be on the NBFC.

Which of the statements given above is/are correct?

(a) 1 and 3 only
(b) 1 only
(c) 2 and 3 only
(d) 3 only

**79.** Consider the following:

1. Private Final Consumption Expenditure
2. Gross Fixed Capital Formation
3. Imports
4. Exports

Arrange the above-given items in the decreasing order of their share in the total GDP of India in 2021-22.

(a) 4-3-2-1
(b) 1-3-2-4
(c) 1-2-3-4
(d) 2-1-3-4

**80.** With reference to the Impeachment procedure of the President of India and the USA, consider the following statements:

1. While the ground for the impeachment of the Indian President is the Violation of the Constitution, for the President of the USA there are no specific grounds.
2. Only the Lower House of the Legislature can initiate the process for the impeachment of the President of India as well as the USA.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**81.** In the context of astronomy, Messier 87, REBELS-29-2, Alcyoneus are

(a) Galaxies
(b) Planets
(c) Comets
(d) Blackholes

**82.** In the context of the stock market, consider the following statements with respect to demutualization:

1. It is the process of converting the organizational structure of the stock exchange from a non-corporate structure to a corporate structure.
2. In a demutualized exchange, the ownership, management, and trading functions are in separate hands.
3. In India, more than 90% of recognized stock exchanges are demutualized.

Which of the statements given above are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

**83.** With reference to the sedition law in India, consider the following statements:

1. If any person attempts to bring hatred or contempt towards the Parliament of India he/she shall be punishable with imprisonment for life.
2. It was introduced in the original draft of the Indian Penal Court in 1860.
3. The first known instance of the application of the law was the trial of Mahatma Gandhi.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 and 3 only
(c) 3 only
(d) None

**84.** She was the first woman in India to contest for elections in a state legislative assembly. During the Civil Disobedience Movement of 1930, she addressed meetings and picketed foreign cloth and liquor shops. She had persuaded Gandhiji not to restrict the protests to men alone.

Who among the following is being described in the above passage?

(a) Sarojini Naidu
(b) Annie Besant
(c) Kamla Devi Chattopadhyay
(d) Kadambini Ganguly

**85.** Consider the following statements regarding the Black-and-orange Flycatcher (BOF) bird species:

1. It is species of flycatcher that is endemic to the Western Ghats.
2. It is categorized as Vulnerable under the IUCN Red List of Threatened Species.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**86.** Consider the following statements regarding Pollinators:

1. Only insects are included in the category of pollinators.
2. Habitat destruction and widespread pesticide use may lead to the loss of pollinators.
3. Loss of pollinators may lead to falling in the quality and quantity of food and biofuel crops.

Which of the statements given above are correct?

(a) 1 and 2 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

**87.** Consider the following statements:

1. In India, a cheque drawn on savings is considered legal tender.
2. Any person receiving an amount of Rs 1 lakh or more in cash, from a person in a day, in respect of a single transaction is punishable under Income Tax Act, 1961.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**88.** When the US Federal Reserve increases the interest rate, which of the following is/are likely to happen in India?

1. Foreign portfolio investments would increase
2. Reserve Bank of India may increase the interest rates
3. Indian Rupee will appreciate significantly

Select the correct answer using the code given below.

(a) 2 only
(b) 3 only
(c) 1 and 2 only
(d) 1 and 3 only

**89.** Consider the following statements with respect to the Society for Worldwide Interbank Financial Telecommunication (SWIFT):

1. It is operated by IMF to provide services related to the execution of financial transactions between banks worldwide.
2. Only Banks are allowed to become members of SWIFT.
3. SWIFT network manages accounts and holds funds on behalf of banks.

Which of the statements given above is/are correct?

(a) 3 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) None

**90.** Consider the following statements regarding Autogenic and Allogenic Succession:

1. Autogenic succession results because of the changes brought about in the habitat by the members of the community themselves.
2. Allogenic succession may occur in ponds where nutrients and pollutants enter from outside and modify the environment.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**91.** With reference to 'Sea Cucumber,' a marine animal found in India, which of the following statements are correct?

1. It is a carnivorous species.
2. Sea Cucumber is listed under Schedule I of the Wildlife Protection Act (WPA), 1972.
3. Harvesting of the sea cucumber is banned in India.
4. Andaman & Nicobar Island is the world's first sea cucumber conservation area.

Select the correct answer using the code given below.

(a) 1 and 3 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1 and 4 only

**92.** These are one of the few microbes that are known to make oxygen without sunlight. These microorganisms are able to make oxygen even in a dark environment. They along with ammonia-oxidizing archaea play an important role in the nitrogen cycle. They use the oxygen present in water for the production of gaseous nitrogen and by doing so they remove bioavailable nitrogen from the environment thus impacting the nitrogen cycle.

The above-mentioned paragraph refers to which of the following species?

(a) Nitrosopumilus maritimus
(b) Flavobectirium
(c) Escherichia coli
(d) Acidithiobacillus ferrooxidans

**93.** Recently, Global Cybersecurity Outlook 2022, has been released by which of the following organizations?

(a) The Internet Corporation for Assigned Names and Numbers (ICANN)
(b) World Economic Forum (WEF)
(c) International Telecommunication Union (ITU)
(d) CyberPeace Foundation

**94.** Consider the following statements regarding the Infrastructure for the Resilient Island States (IRIS):

1. It is a specific work program to realize the objectives of the United Nations Office for Disaster Risk Reduction.
2. It is aimed at achieving sustainable development through a systematic approach to sustainable and inclusive infrastructure in Small Island Developing States (SIDS).

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

**95.** In the context of the Indian Constitution, the Fundamental Right to freedom of conscience and the right freely to profess, practice, and propagate religion is ***not*** subject to which of the following restrictions in India?

(a) Public Order
(b) Health
(c) Morality
(d) Defamation

**96.** With regard to the proceedings of Lok Sabha, which among the following actions can be taken by the Speaker?

1. Summoning
2. Prorogation
3. Adjournment
4. Dissolution

Select the correct answer using the code given below.

(a) 1, 2 and 4 only
(b) 3 only
(c) 2 only
(d) 1, 3 and 4 only

**97.** Which of the following technologies/ applications are used in the Tiger census in India?

1. CaTRAT
2. MSTrIPES
3. SECR method
4. Maximum Entropy Models

Select the correct answer using the code given below.

(a) 1, 2 and 4 only
(b) 2 and 3 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

**98.** Arrange the following physiographic feature of India from East to West.

1. Bhagelkhand
2. Chotanagpur Plateau
3. Bundhelkhand

Select the correct answer using the code given below.

(a) 2-1-3
(b) 3-1-2
(c) 2-3-1
(d) 1-2-3

**99.** In the context of a flexible exchange rate system, which of the following statements is correct?

(a) The exchange rate of a country is influenced only by the demand for the exports in the foreign country.

(b) The exchange rate of a country is influenced only by the speculation in foreign exchange.

(c) The exchange rate of a country is influenced by both the demand for exports in the foreign country and speculation in foreign exchange.

(d) The exchange rate of a country is neither influenced by the speculation in foreign exchange nor by the demand for the exports in the foreign country.

**100.** Chirand is situated on the banks of river Ganga in the Saran district of Bihar, with pieces of archeological evidence like circular huts and small-scale cultivation of wheat, rice, etc. An abundance of bone tools has been a peculiar finding of this site.

Which of the following periods does the above-mentioned site belong to?

(a) Lower Paleolithic age

(b) Mesolithic age

(c) Chalcolithic age

(d) Neolithic age

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# ANSWERS & EXPLANATIONS
# GENERAL STUDIES (P) TEST – 3499 (2022)

**Q 1.D**

- **Personalities Associated with Non-Cooperation Movement:**
  - **C.R. Das** moved the main resolution on non-cooperation in the annual session of the Congress in Nagpur in 1920 and played a major role in promoting the movement. A successful lawyer, he boycotted the law courts and gave up a lucrative practice. His three subordinates and supporters, Birendranath Samsal in Midnapore, J.M. Sengupta in Chittagong, and Subhash Bose in Calcutta played a major role in uniting the Hindus and Muslims.
  - **J.M. Sengupta,** a Bengali nationalist leader, supported the laborers on tea plantations in Assam in their protests and strike.
  - **Lala Lajpat Rai** was **initially not in favor of the policy of non-cooperation (he was against the boycott of schools) but later he supported the movement.** In fact, he protested against its withdrawal in 1922.
  - **Motilal Tejawat organized the Bhils and the Bhil movement strengthened the non-cooperation activities. Hence, statement 2 is correct.**
  - **Alluri Sitaram Raju led the tribals in Andhra and combined their demands with those of the Non-Cooperation Movement. Hence statement 1 is correct.**
  - **Hasrat Mohani,** a Khilafat leader, condemned the arrest of the Ali brothers and demanded complete independence.
  - **Swami Vishwanand (supported by Ramjas Agarwala, a Marwari mine owner) and Swami Darsananand organized the coal miners of the Raniganj-Jharia belt for the Non-Cooperation Movement. Hence, statement 3 is correct.**
  - **Kishan Singh and Mota Singh** called for no-revenue movements and headed the **'Babbar Akali' group**, which emerged as a dissident of Shiromani Gurudwara Prabhandhak Committee, in 1921 in Jullundur and Hoshiarpur.
  - **Jairamadas Daulatram** was a close associate of Gandhi and promoted the Non-Cooperation Movement.

**Q 2.C**

- **External Commercial Borrowings** are commercial loans raised by eligible resident entities from recognized non-resident entities and should conform to parameters such as minimum maturity, permitted and non-permitted end-uses, maximum all-in-cost ceiling, etc. These borrowings are expected to conform to norms and conditions put forth by the RBI.
- **Framework by RBI to regulated ECBs:**
  - **Different Forms of ECBs:** Loans including bank loans; floating/ fixed-rate notes/ bonds/ debentures (other than fully and compulsorily convertible instruments); **Trade credits beyond 3 years; FCCBs**; FCEBs and Financial Lease (Both Foreign Currency denominated and INR denominated). **Hence statement 1 is correct.**
  - **Eligible borrowers:** All entities eligible to receive FDI. Further, the following entities are also eligible to raise ECB - Port Trusts; Units in SEZ; SIDBI; and EXIM Bank of India.
  - Under the RBI framework, all **eligible borrowers can raise ECB up to USD 750 million** or equivalent per financial year under the automatic route. Further, in the case of FCY denominated ECB raised from direct foreign equity holder, ECB liability-equity ratio for ECB raised under the automatic route cannot exceed 7:1.
  - **Issuance of any type of guarantee by Indian banks**, All India Financial Institutions and NBFCs **relating to ECB is not permitted. Hence statement 2 is correct.**

**Q 3.B**

- Recently, Meghalaya has pitched for UNESCO recognition as the hill State marked its 50th year of creation. **Hence statement 3 is not correct.**
- Meghalaya has been celebrating its Statehood Day on January 21 since 1972.
- **A living root bridge are common in the southern part of the Northeast Indian state of Meghalaya. Hence statement 1 is not correct.**
- **A living root bridge is like a suspension bridge formed by guiding the pliable roots of the rubber fig tree (Ficus elastica)** across a stream or river and allowing the roots to grow and strengthen over time. **Hence statement 2 is correct.**
- There are no records to suggest when the Khasi community started the living root bridge tradition, but ecologists say it highlights the symbiotic relationship between people and nature.
- **Such a bridge is locally called jingkieng jri.**

**Q 4.A**

- **The total forest cover (TFC) of India increased 1,540 square kilometres between 2019 and 2021;** it is 713,789 sq km in 2021. **Hence statement 1 is correct.**
- The TFC in 2021 is 21.71 per cent of the total geographical area (TGA) of the country as against 21.67 per cent of the TGA of the country in 2019. In 2017, the TFC was 21.54 per cent of the TGA.
- India has set a target of bringing 33 per cent of its geographical area under forest cover as envisaged in the National Forest Policy, 1988.
- **The northeastern states of India, Arunachal Pradesh, Assam, Manipur, Nagaland, Tripura, Mizoram, Meghalaya and Sikkim have lost 1,020 square kilometres of forest during 2019-2021,** according to biennial India's State of Forest Report 2021 published by the Forest Survey of India. **Hence statement 2 is correct.**
- **The eight northeastern states account for 23.75 per cent of the country's total forest cover. Hence statement 3 is not correct.**
- The Forest Survey of India defines "forest cover" as all land of one hectare or more of tree patches with a canopy density of more than 10 per cent.

**Q 5.B**

- Amid the row over wearing hijab in schools and colleges, a Union Minister has said the Uniform Civil Code is the "need of the hour" and it should be discussed both in Parliament and in society.
- **Article 44 of the Constitution of India** states that the State shall endeavour to secure for the citizens a **uniform civil code** throughout the territory of India.
- Article 44 is part of the **Directive Principles of State Policy of India** that are the guidelines or principles given to the institutes for governing the State of India.
- **These are provided in Part IV of the Constitution of India. Hence option (b) is the correct answer.**

**Q 6.A**

- On World Environment Day (June 5), **Uttarakhand became the first state in India to take into account Gross Environment Product (GEP) while calculating its Gross Domestic Product (GDP).**
- GEP is the total value of final ecosystem services supplied to human well-being in a region annually and can be measured in terms of biophysical value and monetary value.
- **It indicates the overall health of the environment** as GEP measures prime indicators such as forest cover, soil erosion, air quality and dissolved oxygen in river water.
- **GEP monetizes the loss of biodiversity and other environmental factors. Hence statement 1 is correct.**
- Unlike **Green GDP** which is obtained after deducting the damage to the environment from the total production of the state, GEP will assess the improvement in the environment components in a year. **Hence statement 2 is not correct.**

**Q 7.D**

- **Recently, the Maharashtra government has launched a state-wide awareness campaign to reassert its demand for granting Marathi language classical status.**
- In 2004, the government of India undertook an initiative to grant classical language status to languages. Till date, six languages — Tamil, Sanskrit, Malayalam, Telugu, Kannada and Odia — have been given classical language status. The central government has laid down certain criteria for obtaining this status.

- **Currently, six languages enjoy the 'Classical' status: Tamil (declared in 2004), Sanskrit (2005), Kannada (2008), Telugu (2008), Malayalam (2013), and Odia (2014).**
- **Ministry of Culture has evolved the following criteria to determine the declaration of a language as a Classical language**
  - **High antiquity of a language's early texts/recorded history over a period of 1500-2000 years**
  - **A body of ancient literature/texts, which is considered a valuable heritage by generations of speakers**
  - **The literary tradition be original and not borrowed from another speech community**
  - **The classical language and literature being distinct from modern, there may also be a discontinuity between the classical language and its later forms or its offshoots.**
- **Hence, option (d) is the correct answer.**

**Q 8.B**

- **Manusmrti:**
  - It is one of the best-known legal texts of early India, written in Sanskrit and compiled between the **2nd century BCE and 2nd century CE**. The Vedic age was between 1500 BC to 600 BC. **Hence pair 1 is not correctly matched.**
  - It is one of the earliest and most authoritative law texts followed by the Hindus, covering a wide range of topics.
  - It is a metrical (one that is written in poetic verses) text, which presents a discourse given by the Prajapati Manu, to a congregation of seers after a Mahapralaya (great Floods) in ancient India. The discourse was recorded and preserved in memory as a dialogue between himself and the sage Bhrigu in some 2700 Shlokas.
  - It remained the standard point of reference for all future Dharmaśāstras. It was translated in 1794 by Sir William Jones.
- **Gathasattasai or Gathasaptashati:**
  - The name Gathasaptashati means 700 verses written in the gatha form and attributed to a **Satavahana king** called Hala. **Hence pair 2 is correctly matched.**
    - It was written in **Prakrit.**
- **Amarakosa:**
  - The Amarakosa is a thesaurus of Sanskrit written by the ancient Indian scholar **Amarasimha during** the **Gupta period. Hence pair 3 is correctly matched.**
  - Amarsimha was a popular personality in the court of Chandragupta II.

**Q 9.B**

- Recently, **the Kerala Bird Atlas (KBA), the first-of-its-kind state-level bird atlas in India,** has created solid baseline data about the distribution and abundance of various bird species across all major habitats giving an impetus for futuristic studies. **Hence option (b) is the correct answer.**
- KBA was prepared based on systematic surveys held twice over 60 days a year during the wet (July to September) and dry (January to March) seasons between 2015 and 2020.
- KBA accounted for nearly three lakh records of 361 species, including 94 very rare species, 103 rare species, 110 common species, 44 very common species, and 10 most abundant species.
- It is arguably Asia's largest bird atlas in terms of geographical extent, sampling effort and species coverage derived from the aggregation of 25,000 checklists.
- It was found that the species count was higher during the dry season than in the wet season while species richness and evenness were higher in the northern and central districts than in the southern districts.

**Q 10.D**

- The interaction of the Turks with the Indians had its influence on architecture, fine arts, and literature. The **Turks inherited the rich Arab tradition of music** which had been further developed in Iran and Central Asia. They brought their **musical instruments like Rabab and Sarangi.** Amir Khusrau proclaimed that Indian music had a pre-eminence over all the other music of the world. **The Sufi practice of Sama, recitation of love poetry to the accompaniment of music, was instrumental in the promotion of music. Hence statements 1 and 3 are correct.**
- **Pir Bhodan**, a Sufi saint, was considered a great musician of the age. Royal patronage for the growth of music was also forthcoming. **Firuz Shah Tughlaq** evinced interest in music leading to synchronization by translating an Indian Sanskrit musical work **Rag Darpan into Persian.** Dancing also received an

impetus in the official court. Zia-ud-din Barani lists the names of Nusrat Khatun and Mihr Afroz as musicians and dancers respectively in the court of Jalaluddin Khalji. **Hence statements 2 is correct.**

- A regional kingdom where music was highly cultivated was the kingdom of Gwalior. **Raja Man Singh of Gwalior** was a great music lover. The work, **Man Kautuhal,** in which all new musical modes introduced by the Muslims were included, was prepared under his patronage. It is not clear at what time the musical modes in north India began to differ from those in the south. But there is little doubt that the differentiation was largely due to the incorporation of Perso-Arabic modes, airs, and scales.

**Q 11.D**

- **Recently, Keshavananda Bharti of landmark Kesavananda Bharati Sripadagalvaru and Others v State of Kerala case passed away.**
- The case dealt with a petition against the Kerala Government challenging the compulsory acquisition of his land by the Government under the Kerala Land Reforms Act 1963, as a violation of Fundamental Rights (FRs), as enshrined in - Articles 25, 26, and 31 of the Constitution of India.
- **The case was heard by a Bench of 13 judges, the largest formed in the Supreme Court (SC). Hence statement 1 is correct.**
- The outcomes of the judgment are as follows:
  - **It upheld the validity of the 24th amendment:** SC held that Parliament had the power to amend any or all provisions of the Constitution (including FRs), with a condition that the amendments should not alter, damage, or destroy the essential features or the fundamental principles of the Constitution. This came to be known as the "Basic Structure Doctrine".
  - **It corrected the judgments of the Golaknath case:** SC held that Article 368 contained both the power and the procedure for amending the Constitution and that **amending powers and legislative powers of Parliament were different. Hence statement 2 is correct.**
  - SC upheld the 25th and 29th Amendments of the Indian Constitution except for the parts that curtailed its power of judicial review and also asserted that the **Preamble is a part of the Constitution and hence amendable. Hence statement 3 is correct**.

**Q 12.D**

- **A proportional tax is an income tax system that levies the same percentage tax to everyone regardless of income.** A proportional tax is the same for low, middle, and high-income taxpayers. Proportional taxes are sometimes referred to as flat taxes. **Hence statement 1 is not correct.**
- In a proportional tax system, all taxpayers are required to pay the same percentage of their income in taxes. For example, if the rate is set at 20%, a taxpayer earning $10,000 pays $2,000 and a taxpayer earning $50,000 pays $10,000. Similarly, a person earning $1 million would pay $200,000.
- **A regressive tax is a tax imposed in such a manner that the average tax rate decreases as the amount subject to taxation increases.** "Regressive" describes a distribution effect on income or expenditure, referring to the way the rate progresses from high to low, **where the average tax rate exceeds the marginal tax rate.** In terms of individual income and wealth, a regressive tax imposes a greater burden (relative to resources) on the poor than on the rich — there is an inverse relationship between the tax rate and the taxpayer's ability to pay as measured by assets, consumption, or income. **Hence statement 2 is not correct**

**Q 13.B**

- **Seva Sadan was founded by a Parsi reformer Behramji M. Malabar**i along with his friend Diwan Dayaram Gidumal in 1908. It specialized in taking care of those women who were exploited and then discarded by society. **Hence pair 1 is not correctly matched.**
- **It catered to all castes and provided the destitute women with education, medical and welfare services.**
- **Dev Samaj was founded in 1887 in Lahore by Shiv Narayan Agnihotri.** It was a religious and social reform society. **Hence pair 2 is not correctly matched.**
- It emphasized the eternity of the soul, the supremacy of the guru, and the need for good action. Its teachings were compiled in a book called Devashastra.
- **Dharma Sabha was founded by Radhakant Deb in 1830**. **Hence pair 3 is correctly matched**. It was an **orthodox society that stood for the status quo in socio-religious matters** and opposed the abolition of Sati. However, it favored western education for all.
- **Radhaswami movement was founded in 1861 by a banker from Agra known as Shiv Dayal Saheb**. **Hence pair 4 is correctly matched.**
- It believed in the supremacy of guru, the company of pious people (Satsang), and simple social life.

**Q 14.B**

- **Recently, India's first indigenous Flying Trainer Aircraft, HANSA-NG designed and developed by CSIR-National Aerospace Laboratories, Bangalore under the aegis of Council of Scientific and Industrial Research, has successfully completed the sea level trials at Puducherry.**
- The objectives of sea level trials were to evaluate handling qualities, climb / cruise performance, balked landing, structural performance including positive & negative G, power plant, and other systems performance.
- **HANSA-NG is one of the most advanced flying trainer aircraft powered by Rotax Digital Control Engine with unique features like Just-In-Time Prepreg (JIPREG) Composite lightweight Airframe, Glass Cockpit, Bubble Canopy with wide panoramic view, electrically operated flaps, etc.**
- HANSA-NG is designed to meet the Indian flying club needs and it is an ideal aircraft for Commercial Pilot Licensing (CPL) due to its low cost and low fuel consumption.
- **Hence, option (b) is the correct answer.**

**Q 15.D**

- Periodic Labour Force Survey 2019-20 shows that formal vocational/technical training among youth (age 15-29 years) and working population (age 15-59 years) have improved in 2019-20 over 2018-19. The improvement in skills has also been for males and females, both in rural and urban sectors.
- The new National Education Policy (NEP) 2020 is set to replace the existing National Policy on Education which was first formulated in 1986 and last modified in 1992. **At least 50 percent of school learners get exposure to vocational education by 2025 is one of the targets under national education policy. Hence statement 1 is correct.**
- **Jan Shikshan Sansthan (JSS) Scheme: JSS aims to provide vocational skills to non-literate, neo-literates, persons with a rudimentary level of education up to 8th and school dropouts up to 12th standard in the age group of 15-45 years. Hence statement 2 is correct.**
- Pradhan Mantri Kaushal Vikas Yojana (PMKVY) was launched under Skill India Mission of 2015. PMKVY has two training components, viz., Short Term Training (STT) and Recognition of Prior Learning (RPL). **PMKVY also provided training to Shramiks (migrant laborers) affected by COVID-19. Hence statement 3 is correct.**

**Q 16.D**

- In human beings, the food passes through a continuous canal which begins at the buccal cavity and ends at the anus. The canal can be divided into various compartments:
  - the buccal cavity
  - food pipe or oesophagus
  - stomach
  - small intestine
  - large intestine ending in the rectum
  - anus.
- These parts together form the alimentary canal (digestive tract). The food components gradually get digested as food travels through the various compartments. The inner walls of the stomach and the small intestine, and the various glands such as salivary glands, the liver and the pancreas secrete digestive juices. The digestive juices convert complex substances of food into simpler ones. The digestive tract and the associated glands together constitute the digestive system.
- The stomach is a thick-walled bag. Its shape is like a flattened U and it is the widest part of the alimentary canal. It receives food from the food pipe at one end and opens into the small intestine at the other.
- **The inner lining of the stomach secretes mucous, hydrochloric acid and digestive juices. The mucous protects the lining of the stomach. The acid kills many bacteria that enter along with the food and makes the medium in the stomach acidic. The digestive juices break down the proteins into simpler substances. Hence, statement 1 is correct.**
- **The small intestine is highly coiled and is about 7.5 metres long. It receives secretions from the liver and the pancreas. Besides, its wall also secretes juices.**
  - The liver is a reddish-brown gland situated in the upper part of the abdomen on the right side. It is the largest gland in the body. It secretes bile juice that is stored in a sac called the gall bladder. Bile plays an important role in the digestion of fats. The pancreas is a large cream-coloured gland located just below the stomach.
  - The pancreatic juice acts on carbohydrates and proteins and changes them into simpler forms. The partly digested food now reaches the lower part of the small intestine where the intestinal juice

completes the digestion of all components of the food. The carbohydrates get broken into simple sugars such as glucose, fats into fatty acids and glycerol, and proteins into amino acids
    - The digested food can now pass into the blood vessels in the wall of the intestine. This process is called absorption. The inner walls of the small intestine have thousands of finger-like outgrowths. These are called villi.
- **The large intestine is wider and shorter than the small intestine. It is about 1.5 metres in length. Hence, statement 2 is correct.**
- **Its function is to absorb water and some salts from the undigested food material. The remaining waste passes into the rectum and remains there as semi-solid faeces. The faecal matter is removed through the anus from time to time. This is called egestion. Hence, statement 3 is correct.**

**Q 17.C**

- Colonial rule was first established in Bengal. It is here that the earliest attempts were made to reorder rural society and establish a new regime of land rights and a new revenue system.
- At the time of rent collection, an officer of the zamindar, usually the amlah, came around to the village. But rent collection was a perennial problem. Sometimes bad harvests and low prices made payment of dues difficult for the ryots. At other times ryots deliberately delayed payment. **Rich ryots and village headmen – jotedars and mandals – were only too happy to see the zamindar in trouble. Jotedars gave out loans to other ryots and sold their produce. Hence pair 1 is not correctly matched.**
- A large part of their land was cultivated through **sharecroppers (adhiyars or bargadars)** who brought their own ploughs, laboured in the field, and handed over half the produce to the jotedars after the harvest. **Hence pair 2 is not correctly matched.**
- **Zamindars** were responsible for: (a) paying revenue to the company (b) distributing the revenue demand (jama) over villages. In Each village ryot, big or small paid rent to the zamindar.
- **Ryots** cultivated some land and gave out the rest to under-ryots on rent. n Under-ryots paid rent to the ryots.
- The jotedars who cultivate large portions of lands are very refractory, and know that the zamindars have no power over them. They pay only a few rupees on account of their revenue and then fall in balance almost every kist (instalment), they hold more lands than they are entitled to by their **pottahs (deeds of contract). Hence pair 3 is correctly matched**.

**Q 18.D**

- As many as 153 private members' Bills were introduced in the Lok Sabha in the winter session including one that seeks protection from lynching and another wants compulsory teaching of the Bhagavad Gita in educational institutions. Any Member of Parliament (MP) who is not a Minister is referred to as a private member. The purpose of the private member bill is to draw the government's attention to what individual MPs see as issues and gaps in the existing legal framework, which require legislative intervention.
- **Statement 1 is correct:** A member who wants to introduce a bill has to give prior notice for the introduction of the bill which is one month unless the speaker allows introduction at a shorter notice. The notice is to be accompanied by a copy of the bill and explanatory statements of objectives and reasons.
- **Statement 2 is correct:** The last two and half hours of a sitting every Friday are generally allotted for the transaction of "Private member's business". If there is no sitting of the house on Friday, the presiding officer may direct that two and half hours on any other day in a week may be allotted for the transaction of a private member's bill.
- **Statement 3 is correct:** As recommended by the committee on private member's bills and resolution (3rd Lok Sabha) in their fourteenth report, a private member cannot introduce more than four bills in the session.

**Q 19.A**

- Recent Context: The Reserve Bank launched two key initiatives in March 2022:
    - **UPI123Pay** – Option to make Unified Payments Interface (UPI) payments **for feature phone users (traditional mobile phones and not smartphones)**,
    - **DigiSaathi - a 24x7 Helpline to address the queries of digital payment users across products.**
- While launching the two initiatives, the RBI highlighted the importance of these initiatives in enhancing the diversity, utility, and transformational power of digital innovations in the country. These initiatives will further deepen the digital ecosystem and financial inclusion.
- At present, efficient access to UPI is available on smartphones. UPI can be accessed through NUUP (National Unified USSD Platform) using the shortcode of *99#. But this option is cumbersome and not

popular. Considering that there are more than **40 crore feature phone mobile subscribers** in the country, UPI123pay will materially improve the options for such users to access UPI.

- The 24x7 Helpline – 'DigiSaathi' – provides a channel to obtain help on the entire gamut of digital payments. Automated responses on information related to digital payment products and services are available in Hindi and English through multiple options.
- **Hence option (a) is the correct answer.**

**Q 20.C**

- **The report Forest Products in the global bio-economy: Enabling substitution by wood-based products and contributing to the Sustainable Development Goals was recently published.**
  - Renewable wood-based products can help combat climate change and achieve Sustainable Development Goals, according to a new report by the Food and Agriculture Organization (FAO) of the United Nations.
  - Engineered wood products and wood-based textile fibres are two emerging forest product categories that can provide renewable and sustainable solutions to the global crisis.
  - **Lyocell fibres are modern wood-based textile fibres that have properties like viscose and polyester. Hence statement 1 is correct.**
  - Lyocell, originally trademarked in 1982 as Tencel, is a form of rayon.
  - It consists of cellulose fibre, made from dissolving pulp and then reconstituting it by dry jet-wet spinning.
  - The fibre is used to make textiles for clothing and other purposes.
  - **Unlike rayon made by the viscose process, lyocell production does not use harmful carbon disulfide, which is toxic to workers and the environment. Hence statement 2 is correct.**

**Q 21.B**

- **Departments under Finance Ministry:**
  - **The Department of Expenditure** is the nodal Department for overseeing the public financial management system in the Central Government and matters connected with state finances. It is responsible for the implementation of the recommendations of the Finance Commission and Central Pay Commission, monitoring of audit comments/ observations, preparation of Central Government Accounts.
  - **Department of Financial Services:** The mandate of the Department of Financial Services covers the **functioning of Banks, Financial Institutions, Insurance Companies, and the National Pension System.** The Department oversees several key programs/initiatives and reforms of the Government concerning the Banking Sector, the Insurance Sector, and the Pension Sector in India.
  - **Department of Revenue:** The Department of Revenue functions under the overall direction and control of the Secretary (Revenue). It exercises control in respect of matters relating to all the Direct and Indirect Union Taxes through two statutory Boards namely, the Central Board of Direct Taxes (CBDT) and the Central Board of Indirect Taxes and Customs (CBIC).
    - ✓ **Central Economic Intelligence Bureau (CEIB)** is the **central nodal agency under the Department of Revenue,** mandated to gather intelligence/ information on economic offenses and maintain a database of the same for sharing with law enforcement agencies concerned. **Hence statement 2 is correct.**
  - **Department of Economic Affairs:** Principal responsibility of this department is the preparation and presentation of the Union Budget to the parliament and budget for the state Governments under President's Rule and union territory administrations. The **National Small Savings Fund (NSSF)** was established by the Union Government in 1999. **NSSF is administered by the Department of Economic Affairs. Hence statement 1 is not correct.**
  - **Department of Investment and Public Asset Management (DIPAM)** deals with all **matters relating to the management of Central Government investments in equity including disinvestment of equity in Central Public Sector Undertakings.** The Four major areas of its work relate to Strategic Disinvestment, Minority Stake Sales, Asset Monetisation, and Capital Restructuring. It also deals with all matters relating to the sale of Central Government equity through offer for sale or private placement or any other mode in the erstwhile Central Public Sector Undertakings. DIPAM is working as one of the Departments under the Ministry of Finance. **Hence statement 3 is not correct.**

**Q 22.C**

- **Recently, Indian researchers have developed transparent ceramics, reaching theoretical transparency through a technique called colloidal processing followed by simultaneous application of temperature and pressure, for the first time in India.**
- Transparent ceramics is a new class of advanced materials with unique transparency and excellent mechanical properties. These materials can be designed not only for transparent to visible light but also for ultraviolet (UV), Infrared (IR), and Radiofrequency (RF), giving opportunity for diverse applications.
  - Though produced by different countries globally, transparent ceramics are restricted in supply as they can be used for strategic applications.
- Generally, prepared from the high purity powders through a line of critically engineered processing steps, transparent ceramics needs preparation processes that will help achieve theoretical transparency by eliminating defects.
- Researchers at the Advanced Research Centre for Powder Metallurgy and New Materials have produced magnesium aluminate spinel ceramics with colloidal processing followed by the HotIsostatic Pressing (HIP) technique which involves the simultaneous application of temperature and pressure.
  - **Spinel is currently emerging as a transparent ceramic based on the outstanding optical properties of transmission – more than 75 % in the visible and more than 80% in the infrared range.**
  - **Spinel is a mineral composed of magnesium aluminum oxide (MgAl2O4) or any member of a group of rock-forming minerals, all of which are metal oxides. Hence, statement 1 is correct.**
- **Transparent ceramics have applications in infantry personal protection systems involving thermal imaging such as helmets, face shields, and goggles. Hence, statement 2 is correct.**

**Q 23.D**

- Air Quality monitoring involves different microenvironments such as metro city Background; Commercial; Urban complex; Sub-urban; Residential; Industrial; Roadside; Traffic junction etc. to come at one index for a city's air quality.
- **The SAFAR observational network of Air Quality Monitoring Stations (AQMS) and Automatic Weather Stations (AWS) established within city limits represents selected microenvironments of the city**. Air Quality indicators are monitored at about 3 m height from the ground with online sophisticated instruments. These instruments are operated round the clock and data is recorded and stored at every 5-minute interval for quality check and further analysis.
- **Pollutants monitored:**
- **PM1, PM2.5, PM10, Ozone, CO, NOx (NO, NO2), SO2, BC, Methane (CH4), Non-methane hydrocarbons (NMHC), VOC's, Benzene, Mercury**
- **Monitored Meteorological Parameters:**
- **UV Radiation, Rainfall, Temperature, Humidity, Wind speed, wind direction, solar radiation**
- This is the first of such kind of network in India which continuously monitors all these parameters and maintains an up-to-date database with robust quality control and quality assurance.

**Q 24.B**

- **Following events that occurred during the reign of Lord Ellenborough (1842-1844)**
  - Annexation of Sindh (1843). **Hence, pair 1 is correctly matched.**
  - War with Gwalior (1843).
- **Treaty of Lahore** (1846) was signed between Maharaja Duleep Singh, who was the ruler of Punjab, and Britishers. **Lord Hardinge, I (1844-48) was the Governor-General of British India. Hence, pair 2 is not correctly matched.**
- **First Anglo-Afghan War (1838-42) was fought between the British and the Amir of Afghanistan (Dost Muhammad). Lord Auckland (1836-42) was Governor-General of British India during this time. Hence, pair 3 is not correctly matched.**

**Q 25.B**

- **Declaration on Forests and Land Use (or the Deforestation Declaration) was signed at the 26th Conference of Parties (CoP26) to the United Nations Framework Convention on Climate Change (UNFCCC) in Glasgow. Hence statement 1 is not correct.**
- It was signed by 141 countries, which represented over 90 percent of forests across the world, committed to **"halt and reverse forest loss and land degradation by 2030 while delivering sustainable development and promoting an inclusive rural transformation". Hence statement 2 is correct.**

- The signatories committed $19 billion in private and public funds to this end.
- **India was among the few countries that did not sign the declaration. Hence statement 3 is not correct.**
- **India had concerns about the linkage the declaration makes between deforestation, infrastructure development, and trade.**

**Q 26.C**

- The Constitution of India in Article 263, provided that an Inter-State Council may be established **"if at any time it appears to the President that the public interests would be served by the establishment of a Council".**
- **It is not a permanent constitutional body.** It is set up from time to time. **Hence statement 1 is not correct.**
- **It is set up by the President of India and not the Prime Minister. Hence statement 2 is not correct.**
- The Inter-State Council composes of the following members:
  - Prime Minister, Chairman
  - Chief Ministers of all states
  - Chief Ministers of the union territories having legislative assemblies
  - Administrators of the union territories not having legislative assemblies
  - 6 Union Cabinet Ministers, including Home Minister, to be nominated by the Prime Minister
  - Governors of the states being administered under President's rule
- Its functions are as follows:
  - **inquiring into and advising upon disputes which may have arisen between States. Hence statement 3 is correct.**
  - investigating and discussing subjects in which some or all of the States, or the Union and one or more of the States, have a common interest.
  - making recommendations upon any such subject and, in particular, recommendations for the better coordination of policy and action with respect to that subject.

**Q 27.A**

- Recently, an international team has thrown light on **Bharitalasuchus Tapani, a carnivorous reptile that lived 240 million years ago.** In the mid 20th century, researchers from the Indian Statistical Institute, Kolkata, carried out extensive studies on rocks of the Yerrapalli Formation in Telangana, uncovering several fossils. By studying some of these specimens stored at the Institute, an international team has now thrown light on this carnivorous reptile. A precise identification had not been possible earlier because the family was not known from other examples in India. **Hence option (a) is the correct answer.**
- It belongs to a genus and species previously unknown to science. Bharitalasuchus is an extinct genus of erythrosuchid archosauriformes known from the Middle Triassic Yerrapalli Formation of India. It contains a single species, Bharitalasuchus tapani, known as a holotype and paratype consisting of tooth-bearing cranial fragments. **The species is named after paleontologist Tapan Roy Chowdhury in honor of his contribution to Indian vertebrate paleontology and especially his extensive work on the Yerrapalli Formation tetrapod fauna.** Bharitalasuchus tapani were robust animals with big heads and large teeth, and these probably predated other smaller reptiles. They were approximately the size of an adult male lion and might have been the largest predators in their ecosystems

**Q 28.A**

- **Metamaterials are artificially structured materials** used to control and manipulate light, sound, and many other physical phenomena. The properties of metamaterials are derived both from the inherent properties of their constituent materials, as well as from the geometrical arrangement of those materials**.**
- **Though there are many structures that qualify as metamaterials, the most common is that of an arrangement of elements whose size and spacing are much smaller relative to the scale of spatial variation of the exciting field. In this limit, the responses of the individual elements, as well as their interactions, can often be incorporated (or homogenized) into continuous, effective material parameters; the collection of discrete elements is thus replaced conceptually by a hypothetical continuous material.**
- **Metamaterials are designed to induce customized properties in a material that do not exist in its natural form. The metamaterial structures are obtained by making significant changes in internal material structure through different techniques.**

- **These materials derive their properties from internal micro-and nanostructures, rather than the chemical composition found in natural materials. As a result, metamaterial structures enable properties and capabilities, which are generally not possible to create using conventional material discovery or chemical manufacturing technologies.**
- Metamaterials are typically built of multiple identical elements fashioned from conventional materials, such as metals or nonconductive materials.
- The core concept of metamaterial design is to craft materials by using artificially designed and fabricated structural units to achieve the desired properties and functionalities. These structural units – the constituent artificial 'atoms' and 'molecules' of the metamaterial – can be tailored in shape and size and interatomic interaction can be artificially tuned.
- **Among the most sought-after properties of metamaterials are the negative index of refraction of light and other radiation.**
    - All known natural materials have a positive refractive index so that light that crosses from one medium to another gets slightly bent in the direction of propagation.
    - In some metamaterials, however, negative refraction occurs such that light and other radiation get bent backward as it enters the structure.
    - With such negative refraction materials, many applications become possible in electronics manufacturing, lithography, biomedicine, insulating coatings, heat transfer, space applications, and perhaps new approaches to optical computing and energy harvesting.
- Metamaterials are expected to have an impact across the entire range of technologies, especially where electromagnetic radiation is used and is expected to provide a flexible platform for technological advancement.
- **Hence, option (a) is the correct answer.**

**Q 29.D**

- **Recently, the Union Ministry of Environment, Forest, and Climate Change notified Plastic Waste Management Amendment Rules, 2021, on August 12, 2021, prohibiting 20 identified single-use plastic items by 2022.**
- The manufacture, import, stocking, distribution, sale, and use of the following single-use plastic, including polystyrene and expanded polystyrene, commodities shall be prohibited with effect from the 1st July 2022:
    - **earbuds with plastic sticks,** plastic sticks for balloons, plastic flags, candy sticks, **ice-cream sticks, polystyrene [Thermocol] for decoration**
    - plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays, wrapping or packing films around sweet boxes, invitation cards, and cigarette packets, **plastic or PVC banners less than 100 micron, stirrers. Hence option (d) is the correct answer.**
- In order to stop littering due to lightweight plastic carry bags, with effect from 30th September 2021, the thickness of plastic carry bags has been increased from fifty microns to seventy-five microns and to one hundred and twenty microns with effect from the 31st December 2022. This will also allow the reuse of plastic carry due to an increase in thickness.

**Q 30.C**

- Gene-editing tools are based on the engineered nucleases comprised of sequence-specific binding domains and non-specific DNA cleavage modules.
- ZFN (**Zinc finger nucleases**), TALEN (**Transcription activator-like effectors nucleases)**, and CRISPR are three types of gene editing techniques. ZEN and TALEN are man-made systems, while CRISPR is a natural system occurring in bacteria. **Hence option (c) is the correct answer.**
- All three systems recognize sequences and cleave target DNA.
- **Zinc finger–domain-containing proteins** bind to DNA and are widespread in nature, often functioning as transcription factors (proteins that regulate gene expression by binding directly or indirectly to regulatory DNA sequences usually found in the promoter regions of genes3). The zinc finger domains can be manipulated to bind specific sequences of DNA; when fused to the DNA-cutting nuclease domain of the FokI protein, a ZFN is the resulting hybrid molecule.
- **CRISPR RNA (crRNA):** Once a spacer is incorporated and the virus attacks again, a portion of the CRISPR is transcribed and processed into CRISPR RNA, or "crRNA." The nucleotide sequence of the CRISPR acts as a template to produce a complementary sequence of single-stranded RNA. Each crRNA consists of a nucleotide repeat and a spacer portion.Cas9: The Cas9 protein is an enzyme that cuts foreign DNA. The protein typically binds to two RNA molecules: crRNA and another called tracrRNA (or "trans-activating crRNA").

- **Transcription activator-like effectors (TALEs)** were discovered in the bacterial plant pathogen Xanthomonas and could be engineered to bind to virtually any DNA sequence. Their ease of design for specific target DNA sequences revolutionized genome editing. In nature, Xanthomonas species secrete TALEs into plant cells to enable pathogenicity. TALEs bind to promoters in plant genes to suppress the plant's resistance to the pathogen.

**Q 31.D**

- Harshvardhana (606–647) established his kingdom in north India at the beginning of the seventh century A.D. The chief sources for tracing the history of Harsha and his times are the Harshacharita written by Bana who was the court poet of Harsha and the travel accounts of Hiuen Tsang, the Chinese traveler who visited India in the seventh century A.D.
- **Statement 1 is not correct:** The administration of Harsha was organized on the same lines as the Guptas did. But during his time administration became more decentralized and the number of feudatories grew further. In Harsha's time, the officers and the religious persons were paid mainly inland. It encouraged the system of feudalism which grew much more in the post- Harsha period.
- In the empire of Harsha law and order were not so well maintained. Hsuan Tsang was twice robbed of all his belongings during his travels in India. Cruel punishments of the Mauryan period continued in the times of Harsha.
- Taxation was light and forced labor was also rare. One-sixth of the produce was collected as land tax. The maintenance of public records was the salient feature of Harsha's administration. The archive of the Harsha period was known as nilopitu and it was under the control of special officers.
- **Statement 2 is not correct:** Harsha convened a grand assembly at Kannauj to widely publicize the doctrines of the Mahayana form of Buddhism. He invited representatives of all religious sects. It was attended by 20 kings, 1000 scholars from the Nalanda University, 3000 Hinayanists and Mahayanists, 3000 Brahmins and Jains. Chinese pilgrim Hiuen Tsang also attended the assembly.

**Q 32.D**

- The International System of Units (SI) rests on a foundation of seven defining constants: the cesium hyperfine splitting frequency, the speed of light in vacuum, the Planck constant, the elementary charge (i.e. the charge on a proton), the Boltzmann constant, the Avogadro constant, and the luminous efficacy of a specified monochromatic source.
- **The seven SI base units are comprised of:**
  - **Length - meter (m)**
  - **Time - second (s)**
  - **Amount of substance - mole (mole)**
  - **Electric current - ampere (A)**
  - **Temperature - kelvin (K)**
  - **Luminous intensity - candela (cd)**
  - **Mass - kilogram (kg)**
- The International System of Units, universally abbreviated SI, is the modern metric system of measurement. The SI was established in 1960 by the 11th General Conference on Weights and Measures (CGPM). The CGPM is the international authority that ensures wide dissemination of the SI and modifies the SI as necessary to reflect the latest advances in science and technology.
- **Hence, option (d) is the correct answer.**

**Q 33.C**

- **Fatehpur Sikri:**
  - Fatehpur Sikri is located **in Agra**. Known as the **"city of victory"**, it was made **capital by the Mughal emperor Akbar (r. 1556-1605 CE).** Upon moving the **capital to Lahore in 1585**, Fatehpur Sikri remained as an area for temporary visits by the Mughal emperors.
  - The city was originally rectangular in plan, with a grid pattern of roads and by-lanes which cut at right angles, and featured efficient drainage and water management system.
  - The well-defined administrative block, royal palaces, and Jama Masjid are located in the center of the city. The buildings are constructed in red sandstone with little use of marble. **Diwan-i-Am (Hall of Public Audience)** is encircled by a series of porticos broken up at the west by the insertion of the emperor's seat in the form of a small raised chamber separated by perforated stone screens and provided with a pitched stone roof. At the north side of it stands a building popularly known as **Diwan-i-Khas (Hall of Private Audience),** also known as the 'Jewel House'.

- Other monuments of exceptional quality are **Panch Mahal, an extraordinary, entirely columnar five-story structure disposed asymmetrically on the pattern of a Persian badgir, or wind-catcher tower; the pavilion of Turkish Sultana;** Anup Talao (Peerless Pool); **Diwan-Khana-i-Khas** and Khwabgah (Sleeping Chamber); the **palace of Jodha Bai**, the largest building of the residential complex, which has richly carved interior pillars, balconies, perforated stone windows, and an azure-blue ribbed roof on the north and south sides; **Birbal's House;** and the Caravan Sarai, Haram Sara, baths, waterworks, stables, and Hiran tower. Architecturally, the buildings are a beautiful amalgamation of indigenous and Persian styles. **Hence, statement 1 is correct.**
- Amongst the religious monuments at Fatehpur Sikri, Jama Masjid is the earliest building constructed on the summit of the ridge, completed in 1571-72. This mosque incorporates the tomb of Shaikh Salim Chisti, an extraordinary masterpiece of sculpted decoration completed in 1580-81 and further embellished under the reign of Jahangir in 1606.
- To the south of the court is an imposing structure, **Buland Darwaza (Lofty Gate),** with a height of 40 m, completed **in 1575 to commemorate the victory of Gujarat in 1572**. The gate is in the style of what is called a half-dome portal. What was done was to slice a dome in half. This device borrowed from Iran became a feature in Mughal buildings later. **Hence, statement 3 is not correct.**

- **Taj Trapezium Zone (TTZ)**
  - TTZ is a defined area of 10,400 sq km **around the Taj Mahal to protect the monument from pollution.** The Supreme Court of India delivered a ruling on December 30, 1996, regarding industries covered under the TTZ, in response to a PIL seeking to protect the Taj Mahal from environmental pollution. It banned the use of coal/ coke in industries located in the TTZ with a mandate for switching over from coal/ coke to natural gas, and relocating them outside the TTZ or shutting down. The TTZ comprises monuments including three World Heritage Sites the **Taj Mahal, Agra Fort, and Fatehpur Sikri.** TTZ is so named since it is located around the Taj Mahal and is shaped like a trapezoid. **Hence, statement 2 is correct.**

**Q 34.A**

- **Recent Context: The Union Cabinet under the chairmanship of the Prime Minister has approved the extension of the tenure of the National Commission for Safai Karamcharis (NCSK) for three years more**.
- **The National Commission for Safai Karamcharis (NCSK) was constituted in 1994 as a statutory body by an Act of Parliament viz. 'National Commission for Safai Karamcharis Act, 1993', for a period of three years. However, Act ceased to have effect from 29.2.2004 and after that, the tenure of the NCSK has been extended as a non-statutory body from time to time through resolutions.**
- **After the lapsing of the "The National Commission for Safai Karamcharis Act, 1993" w.e.f. 29.2.2004, the Commission is acting as a non-statutory body of the Ministry of Social Justice and Empowerment whose tenure is extended from time to time through Government Resolutions. Hence statement 1 is correct and statement 2 is not correct.**
- The NCSK has been giving its recommendations to the Government regarding specific programmes for the welfare of Safai Karamcharis, studying and evaluating the existing welfare programmes for Safai Karamcharis, investigating cases of specific grievances etc.
- Also as per the provisions of the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013, the NCSK has been assigned the work to monitor the implementation of the Act, tender advice for its effective implementation to the Centre and State Governments and enquire into complaints regarding contravention/non-implementation of the provisions of the Act.

**Q 35.C**

- **Reserve Bank of India launched its first global hackathon – HARBINGER 2021** – Innovation for Transformation with the theme **'Smarter Digital Payments'** with four problem statements to shape the future of the payment systems in India.
- The objective of RBI's maiden hackathon is **"to identify and enable solutions and/or business models that have the potential to make digital payments accessible to the underprivileged section,** enhancing the ease of payments, enriching the experience of the users while strengthening the security of digital payments and protecting the consumers,.
- These challenges include – (a) innovative, easy-to-use, non-mobile digital payment solutions for converting small ticket cash transactions to digital mode; (b) context-based retail payments to remove the physical act of payment; (c) alternate authentication mechanism for digital payments; and (d) Social Media Analysis Monitoring tool for detection of digital payment fraud and disruption.

- The hackathon is owned and sponsored by the Reserve Bank of India (RBI) and is hosted on the Application Programming Interface Exchange (APIX) platform.
- **Hence option (c) is the correct answer**

**Q 36.D**

- **Chalukya Architecture**
  - Historically, in Deccan, Chalukyas introduced the technique of **building temples using soft sandstones** as a medium. In Badami, two temples are dedicated to Vishnu and one each to Siva and to the Jaina Tirthankaras. Their temples are grouped into two: excavated cave temples and structural temples. Badami is known for both structural and excavated cave temples. Pattadakal and Aihole are popular for structural temples.
  - **Aihole (Ayyavole)**
    - ✓ About seventy temples are located in Aihole. The earliest **stone-built temple is Lad Khan temple**. Its **unique trait is a stucco pillar** with a big capital distinct from the northern style. It was the chosen **abode of the Muslim chief Lad Khan.**
    - ✓ A temple dedicated to the **goddess Durga** was built on the model of Buddha Chaitya. It stands on a raised platform in the form of a semi-circle. Another temple, dedicated to the same goddess is called **Huccimalligudi, which is rectangular in shape.** Chalukyas also built Jain temples. **Megudi Jain temple** is illustrative of the evolution of temple architecture under the Chalukyas. The mandapa-type caves are preserved at Aihole.
    - ✓ Other major attractions in the area are the **Ravalphadi Cave Temple** which celebrates the various incarnations of Lord Shiva, the **Konti Temple Complex**, the **Umamaheswari Temple, and the two-storied Buddhist temple. Hence option (d) is the correct answer.**
  - **Badami (Vatapi)**
    - ✓ There are **four caves in Badami**. The largest cave temple built **by Mangalesa is dedicated to Vishnu**. The **reclining posture of Vishnu on the snake bed and Narasimha** are exquisite examples of Chalukya art.

**Q 37.B**

- Born in Maharashtra's Nashik Vinayak Damodar Savarkar is popularly known as Veer Savarkar. He was a great leader, lawyer, and writer. He served as the President of Hindu Mahasabha, formulated the Hindu Nationalist philosophy of "Hindutva" and co-founded the student society called "Abhinav Bharat Society". **He was also associated with societies such as 'India House' and the Free India Society while studying law in the UK**. He authored Indian War of Independence 1857, Hindu RashtraDarshan, Inside the enemy camp, etc. **Hence, both statements 1 and 2 are correct.**
- **Serving as the president of the Hindu Mahasabha political party, he opposed the Quit India movement in 1942. He was a critic of the Indian National Congress and its acceptance of India's partition. Hence, statement 3 is not correct.**
- In 1964, he felt that his goal of independent India is achieved and he declared his wish to attain Samadhi. He started a hunger strike on February 1, 1966, and passed away on February 26, 1966.
- **Hence, option (b) is the correct answer.**

**Q 38.A**

- Purana Qila Delhi or Old Fort was built by Sher Shah Suri during his reign (1540-1545).
- Humayun Tomb which was built by Hamida Banu Begum the wife of Humayun in 1572. It was the first garden-tomb on the Indian subcontinent. The tomb was declared a UNESCO World Heritage Site in 1993.
- Agra Fort was built by Akbar in the year 1573. it was made up of Red Sandstone. It is a UNESCO World Heritage Site
- Charminar was built by Muhammad Quli Qutb Shah the ruler of Golconda in 1591-92.

**Q 39.C**

- The district judge is the highest judicial authority in the district. He possesses **original and appellate jurisdiction in both civil as well as criminal matters.** When he deals with civil cases, he is known as the district judge and when he hears the criminal cases, he is called as the sessions judge.
- Below the District and Sessions Court stands the Court of Subordinate Judge on the civil side and the Court of Chief Judicial Magistrate on the criminal side.
  - **The subordinate judge exercises unlimited pecuniary jurisdiction over civil suits. Hence statement 2 is correct.**
  - The chief judicial magistrate decides criminal cases which are punishable with imprisonment for a term up to seven years.
- At the lowest level, on the civil side, is the Court of Munsiff and on the criminal side, is the Court of Judicial Magistrate.
  - **The munsiff possesses limited jurisdiction and decides civil cases of small pecuniary stake. Its jurisdiction is determined by High Courts. Hence statement 1 is correct.**
  - The judicial magistrate tries criminal cases which are punishable with imprisonment for a term up to three years.

**Q 40.D**

- **Recently, the fifth submarine of Project 75, the Indian Navy's Kalvari class commenced her sea trials.**
- The submarine was launched in Nov 2020 from the Kanhoji Angre Wet Basin of Mazagon Dock Shipbuilders Limited (MDL).
- **The submarine would be named Vagir, after commissioning.**
- The Kalvari class is a class of diesel-electric attack submarines based on the Scorpène-class submarine being built for the Indian Navy.
- The submarines commissioned under this project are **INS Kalvari, INS Khanderi, INS Karanj, INS Vela, INS Vagir.**
- **INS Vagsheer** is expected to be delivered by 2022/23.
- The first submarine, INS Kalvari, was launched in October 2015 and was commissioned in December 2017.
- The second one, INS Khanderi, was launched in January 2017 for trials and commissioned in September 2019.
- The third submarine, INS Karanj, was launched in January 2018 and commissioned on March 10, 2021
- And then INS Vela, the fourth in the series, was launched in May 2019.
- The sixth submarine, INS Vagsheer, is in the advanced stage of outfitting.
- **Hence option (d) is the correct answer.**

**Q 41.C**

- **Pair 1 is not correctly matched:** Ludhiana city was founded in 1480 by members of Delhi's ruling Lodī dynasty, from which its name is derived. It is on the Grand Trunk Road from Delhi to Amritsar at a junction of several rail lines and is a major agricultural market and industrial centre. central Punjab state, northwestern India. **The city stands on the former bank of the Sutlej River,** 8 miles (13 km) south of its present course and about 170 miles (270 km) northwest of Delhi.
- **Pair 2 is not correctly matched: Rajahmundry is a city on the eastern banks of the sacred Godavari River,** in the southeast Indian state of Andhra Pradesh. It's home to the huge, riverside ISKCON Temple complex. North, along the river, Hindu devotees bathe in the Godavari from Saraswati and Pushkar ghats

(bathing steps). The nearby Godavari Bridge offers river views. The ancient Kotilingeshwara Temple is dedicated to the Hindu deity Shiva.

- **Pair 3 is correctly matched:** Dibrugarh is an industrial city surrounded by sprawling tea estates in Assam, northeast India. **It sits on the Brahmaputra River,** and is home to the Radha Krishna Mandir, a Hindu temple constructed of marble. Hitendranath Barua Science and Culture Park features life-size animal sculptures and an open-air stage. Northeast of the city, Dibru Saikhowa National Park is an island reserve that attracts many migratory birds.
- **Pair 4 is correctly matched:** Kota, also spelled Kotah, city, southeastern Rajasthan state, northwestern India. **It lies mainly on the east (right) bank of the Chambal River**, about 40 miles (64 km) northwest of Jhalawar. It was founded as a walled city in the 14th century and became the capital of the princely state in 1625. Kota is a communications and industrial centre, the growth of which resulted from the availability of electric power from the nearby Jawahar Sagar (Kota) Dam

**Q 42.B**

- According to a World Meteorological Organization report, 2015-2021 will be the warmest years on record.
- It also stated that the upper 2,000-metre of the ocean continued to warm in 2019, reaching a new record high.
- A preliminary analysis based on seven global data sets suggested that 2020 surpassed the record
- Ocean warming rates showed a particularly strong increase in the past two decades and are expected to continue to rise in the future
- The ocean absorbed around 23 per cent of the annual emissions of anthropogenic CO2 to the atmosphere and so, has become more acidic.
- Open ocean surface pH declined globally over the last 40 years; it is now the lowest it has been in at least 26,000 years
- **As the pH of the ocean decreases, its capacity to absorb Carbon Dioxide from the atmosphere also declines. Hence statement 1 is not correct.**
- **The Arctic region is warming at more than twice the rate as the rest of the world, mainly because of human-made greenhouse gas emissions. Hence statement 2 is correct.**
- The increased rate of warming is because of a phenomenon known as Arctic amplification, wherein the melting ice hastens the process of warming by exposing areas that are not good at reflecting back heat into the atmosphere.
- This creates a feedback loop between melting ice and rising temperatures, amplifying the impact of warming.
- According to the European Union's Copernicus Atmosphere Monitoring Service, wildfires around the world emitted 1.76 billion tonnes of carbon in 2021 (till November 30).
- **The wildfires mostly occurred in Siberia, North America, North Africa and the Mediterranean. Hence statement 3 is correct.**

**Q 43.D**

- **Recent Context:** India, Bangladesh, and Nepal finalized an enabling memorandum of understanding for implementing the BBIN MVA (Bangladesh, Bhutan, India, Nepal Motor Vehicle Agreement). **Presently, Bhutan continues to opt-out of the agreement.** Its parliament disapproved of its membership in BBIN citing environmental concerns. **Hence statement 2 is not correct.**
- The Bangladesh, Bhutan, India, Nepal (BBIN) Initiative is a subregional architecture of countries in Eastern South Asia, a subregion of South Asia. It meets through the official representation of member states to formulate, implement and review quadrilateral agreements across areas such as water resources management, connectivity of power, transport, and infrastructure.
- India proposed a SAARC Motor Vehicle Agreement during the 18th SAARC summit in Kathmandu in November 2014. Due to objections from Pakistan, an agreement could not be reached. India instead pursued a similar motor vehicle agreement with the BBIN. The BBIN Motor Vehicles Agreement (MVA) was signed on 15 June 2015 at the BBIN transport ministers' meeting (and **not BIMSTEC**) in Thimpu, Bhutan. **Hence statement 1 is not correct**.
- The **BIMSTEC or Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation** is an international organization of seven South Asian and Southeast Asian nations (comprising Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, Thailand ), housing 1.73 billion people and having a combined gross domestic product of $3.8 trillion.

**Q 44.D**

- Naturally occurring Uranium (U) is composed of three major isotopes: Uranium-238 (238U with 99.2739–99.2752% natural abundance), Uranium-235 (235U, 0.7198–0.7202%), and Uranium-234 (234U, 0.0050–0.0059%).
- 235U is the only nuclide existing in nature (in any appreciable amount) that is fissile with thermal neutrons.
- Enriched uranium is a type of uranium in which the percent composition of uranium-235 (written 235U) has been increased through the process of isotope separation. **Hence statement 1 is not correct.**
- **Low-enriched uranium (LEU) has a lower than 20%** concentration of 235U; for instance, in commercial LWR (light-water reactor), the most prevalent power reactors in the world, uranium is enriched to 3 to 5% 235U
- **Highly enriched uranium (HEU)** has a 20% or higher concentration of 235U.
- **Weapons-grade uranium** is highly enriched, to over 85-90% U-235 (the fissile isotope). **Hence statement 2 is not correct.**

**Q 45.B**

- The Delhi High Court had recently asked the Lok Sabha Secretariat to file a reply to a petition, which stated that the post of Lok Sabha Deputy Speaker which has been vacant for more than two years. For 17th Lok Sabha, the date of elections for Deputy Speaker is pending even after more than two years of Lok Sabha constitution in 2019.
- The Speaker and the Deputy Speaker are the Presiding Officers of the Lok Sabha. While the office of Speaker is vacant or during the absence of the Speaker from any sitting of the House, the duties of the office shall be performed by the Deputy Speaker. **Under Article 94**, the speaker resigns from his office by writing to the Deputy Speaker.
- **Statement 1 is correct:** Article 93 provides for "The House of the People shall, as soon as may be, choose two members of the House to be respectively Speaker and Deputy Speaker thereof and, so often as the office of Speaker and Deputy Speaker becomes vacant, the House shall choose another member to be Speaker or Deputy Speaker, as the case may be."
- **Statement 2 is correct:** Being an important constitutional office, the election is usually held on next sitting after Speaker selection as President fixes date for Speaker election and after being elected the Speaker fixes the date for Deputy Speaker election.
- **Statement 3 is not correct:** There is no timeline provided for the election of the deputy speaker to the office in the constitution or rules of procedure for conduct of business in Lok Sabha.

**Q 46.B**

- Formic acid (also called methanoic acid) is the simplest carboxylic acid. Its formula is $CH_2O_2$ or HCOOH.
- **In nature, it is found in the stings and bites of many insects of the order Hymenoptera, including bees and ants. It is also a significant combustion product resulting from alternative-fueled vehicles burning methanol (and ethanol, if contaminated with water) when mixed with gasoline.**
- **Hence, statement 2 is correct.**
- **Formic acid is soluble in water and most polar organic solvents because it can form hydrogen bonds with water. It is somewhat soluble in hydrocarbons also.**
- **Hence, statement 3 is not correct.**
- **Uses**
  - **The principal use of formic acid is as a preservative and antibacterial agent in livestock feed. When sprayed on fresh hay or other silage, it arrests certain decay processes and causes the feed to retain its nutritive value longer, and so it is widely used to preserve winter feed for cattle. In the poultry industry, it is sometimes added to feed to kill salmonella bacteria.**
  - **Hence, statement 1 is correct.**
  - It is used to process organic latex (sap) into raw rubber.
  - Beekeepers use formic acid as a miticide against the Varroa mite.
  - It is of minor importance in the textile industry and for the tanning of leather.
  - It is the active ingredient in some brands of household limescale remover.

**Q 47.B**

- India is the world's second largest gold consumer. However, the country is heavily dependent on imports to fulfil this demand. According to the recently published **Bullion Trade in India report by th World Gold Council (WGC)**, over the five-year period 2016-2020, imports made up 86% of India's gold

supply, while recycling accounted for 13% and mining accounted for just 1%. Since the first duty hike in 2012, India has imported some 6,581 tonnes of gold, averaging 730 tonnes per annum. In 2020, India imported 377 tonnes of gold bars and dore from over 30 countries, of which 55% came from just two countries — Switzerland (44%) and the UAE (11%). One important change that has taken place in India's gold market is the growth in gold dore imports. The increase reflects the government's accommodative stance towards gold refining, the report said. In the last five years, gold dore imports made up 30% of the total official imports of the yellow metal.

- The **World Gold Council** is the market development organisation for the gold industry. Our purpose is to stimulate and sustain demand for gold, provide industry leadership, and be the global authority on the gold market. It's members includes the world's leading and most forward-thinking gold mining companies. In recent years, the WGC have produced guidance, research and practical tools to allow gold miners to report production costs in a more comprehensive and consistent manner. **It is based in the United Kingdom and have operations in India, China, Singapore and the US.**

**Q 48.A**

- Nino da Cunha assumed the office of the governor of Portuguese interests in India in November 1529 and **almost one year later i.e 1530 shifted the headquarters of the Portuguese government in India from Cochin to Goa.**
- **Daman was acquired by the Portuguese from the Shah of Gujarat. While several attempts were made for its possession, it was 2nd February, 1559 the Portuguese finally conquered Daman.**
- **Captain William Hawkins arrived in the court of Jahangir in April 1609 itself.** But the mission to establish a factory at Surat didn't succeed due to opposition from the Portuguese, and Hawkins left Agra in November 1611.
- **Hence, option (a) is the correct answer.**

**Q 49.B**

- **Recent Context: Russia has been accused of having violated the Geneva Conventions.**
- The Geneva Conventions (set of four treaties) and their Additional Protocols (three protocols) are at the core of international humanitarian law, the body of international law that regulates the conduct of armed conflict and seeks to limit its effects. Geneva Conventions have been ratified between 196 countries (including all the UN members). **Hence statement 1 is not correct.**
- They specifically protect people who are not taking part in the hostilities (civilians, health workers, and aid workers) and those who are no longer participating in the hostilities, such as wounded, sick, and shipwrecked soldiers and prisoners of war. **Hence statement 2 is correct.**
- The Conventions and their Protocols call for measures to be taken to prevent or put an end to all breaches. They contain stringent rules to deal with what are known as "grave breaches".
- The **first Geneva Convention** protects wounded and sick soldiers on land during the war. The second Geneva Convention protects wounded, sick, and shipwrecked military personnel at sea during the war. The third Geneva Convention applies to prisoners of war. The fourth Geneva Convention affords protection to civilians, including in occupied territory.
- In the two decades that followed the adoption of the Geneva Conventions, the world witnessed an increase in the number of non-international armed conflicts and wars of national liberation. **In response, two Protocols Additional to the four 1949 Geneva Conventions were adopted in 1977.**
- They strengthen the protection of victims of international (Protocol I) and non-international (Protocol II) armed conflicts and place limits on the way wars are fought. Protocol II was the first-ever international treaty devoted exclusively to situations of non-international armed conflicts.

**Q 50.A**

- **Gahapati** was the owner or master of head of household, who exercised control over women, children, slaves and workers who shared common residence. He was also the owner of resources that belonged to the household.
- **An agrahara** was land granted to a Brahmana, who was usually exempted from paying land revenue and other dues to the king, and was often given the right to collect these dues from the local people.
- During Rig vedic period, cattle were considered synonymous with wealth and the wealthy person was called **gomat.**
- Rigvedic people are mainly pastoral, most of their war were fought for the sake of cows. The term for war is **gavisthi** or search for cows.
- **Hence correct answer is option (a).**

**Q 51.B**

- The Maratha state could not become an alternative to the Mughal empire because of its own structure. Its nature was that of a confederacy where power was shared among the chiefs or sardars, like the Bhonsles of Nagpur, Gaikwad of Baroda, Holkar of Indore or Sindhia of Gwalior, all of whom had made their fortunes as military leaders since the days of Shahu.
- Although there was always a strong center, the composition of the inner circle of power changed from generation to generation. At the lower level, there was the existence of heritable vatan rights, like those of the village headmen, miraisidars and deshmukhs, which could not be taken away by kings. The regional assemblies of vatandars exercised political power and resolve disputes at a local level, thus representing local loyalties as opposed to any centralised concept of kingship. **Hence statement 1 is not correct.**
- After the conquest of Konkan, Shivaji built a strong navy as well. His fleet was equipped with gunboats and rowboats with 2 masts and 40-50 oars. His fleet was mainly manned by the Koli sea-faring tribe of the Malabar coast. He established two squadrons of 200 vessels each. Daulat Khan was another admiral of Shivaji's navy. Shivaji used his naval power to harass both the indigenous and European trade powers. The Peshwas also realized fully the importance of a strong navy for which they maintained a strong fleet to defend the western coast. **Hence statement 2 is correct.**
- The Maratha polity consisted of the king at the helm of affairs. The King was the supreme head of state who was assisted by a group of eight ministers known as the 'Ashtapradhan'. The ashtapradhan was neither the creation of Shivaji nor was at first organised at, the time of his coronation. The Peshwa, Mazumdar, Wakins, Dabir, Sunris existed under the Deccani rulers also. **Hence statement 3 is not correct.**

**Q 52.C**

- **Pyramid of Numbers** is the graphical representation of the total number of individuals of species belonging to each trophic level in the form of a pyramid-like structure.
- For most of the ecosystems, **the pyramid of numbers is upright** because the number of organisms decreases successively at higher trophic levels.
- **In some ecological systems, the pyramid of number may be inverted. Hence statement 1 is not correct.**
- A tree represents an example of an inverted pyramid. The tree supports innumerable insects and bird species. The tree is a primary producer and represents the base of the pyramid. Insect and bird population that is dependent on it represent the second and third trophic levels.
- Similarly, the parasitic food chain is represented by an inverted pyramid. The shape of a pyramid to be upright or inverted depends upon the number of producers. The producers vary greatly in size for each type of ecosystem.
- **The Pyramid of Biomass** represents the total dry weight of species present in each trophic level at a particular time.
- It is measured by taking the dry weight of all the organisms occupying one trophic level. Biomass is measured in g/m2.
- The biomass decreases at each trophic level while going from producer to consumers.
- The diagrammatic representation of biomass of individuals belonging to the different trophic levels shows the shape of an upright pyramid.
- **In some aquatic ecosystems such as lakes and oceans, the pyramid of biomass is inverted. Hence statement 2 is correct.**
- Since microscopic phytoplanktonic algae are primary producers in the aquatic system. Being single-celled organisms, they do not accumulate much biomass and they are eaten up faster by organisms like zooplankton, fish etc. The consumers in these ecosystems are presented by small microscopic zooplankton to large organisms like whales. The weight or the standing crop of phytoplankton is less as compared to herbivores or other consumers. Hence the pyramid of biomass is inverted in the aquatic ecosystem.
- The functional role of the trophic levels in an ecosystem is well represented by the pyramid of energy.
- The drawbacks related to the number and biomass of species can be overcome by a representation of trophic levels in terms of energy.
- **The Pyramid of Energy accurately reflects the laws of thermodynamics.** Loss of energy and its transfer takes place at each trophic level. **Hence statement 3 is correct**.

**Q 53.C**

- The Constitution of India has provided for a division of powers between the Central and state governments. Under the Seventh Schedule, there are three lists – the Union, State and Concurrent.
    - **The Union List** has a range of subjects under which the Parliament may make laws.

- ✓ This includes defence, foreign affairs, railways, banking, **regulation of mines and mineral development in the public interests, organisation of High Courts, Major Ports, Census, regulation and development of inter-State rivers and river valleys among others.**
- **The State List list** subjects under which the legislature of a state may make laws.
  - ✓ Public order, police, public health and sanitation; hospitals and dispensaries, **regulation of mines and mineral development**, betting and gambling are some of the subjects that come under the state.
- **The Concurrent List** includes subjects that give powers to both the Centre and state governments.
  - ✓ Subjects like Education including technical education, medical education and universities, population control and family planning, **criminal law, including all matters included in the Indian Penal Code, criminal procedure, including all matters included in the Code of Criminal Procedure, bankruptcy and insolvency**, prevention of cruelty to animals, protection of wildlife and animals, forests etc. However, given that there can be conflict when it comes to laws passed by Parliament and state legislatures on the same subject, the Constitution provides for a central law to override a state law.

- **Hence option (c) is the correct answer.**

**Q 54.B**

- **Most-favoured-nation (MFN): Under the WTO agreements,** countries cannot normally discriminate between their trading partners. Grant someone a special favour (such as a lower customs duty rate for one of their products) and you have to do the same for all other WTO members. A most-favored-nation (MFN) clause requires a **country to provide any concessions, privileges, or immunities granted to one nation in a trade agreement to all other World Trade Organization member countries.** Although its name implies favoritism toward another nation, it denotes the equal treatment of all countries. **Hence option (b) is the correct answer**
- **Equal treatment of imported and locally produced goods** after foreign goods enter the domestic market is a clause under WTO's another principle known as **National Treatment: Treating foreigners and locals equally.**

**Q 55.C**

- Gallium nitride (GaN) is a semiconductor commonly used in blue light-emitting diodes since the 1990s. The compound is a very hard material. **Hence statement 1 is correct.**
- Its sensitivity to ionizing radiation is low, making it a suitable material for solar cell arrays for satellites. Military and space applications could also benefit as devices have shown stability in radiation environments.
- It has a higher breakdown strength, faster-switching speed, lower thermal conductivity, and lower-on resistance, than silicon-based semiconductors. **Hence statement 2 is correct.**
- Due to high power density and voltage breakdown limits GaN is also emerging as a promising candidate for 5G cellular base station applications.

**Q 56.D**

- The WTO's Agreement on Agriculture (AoA) identifies three main categories of government support: trade-distorting support (amber box); support with no, or minimal, distorting effect (green box); and a category of direct payments under production-limiting programs (blue box).
  - **Green Box:** Agriculture-related subsidies that fit in WTO's green box are policies that are not restricted by the trade agreement because they are not considered trade-distorting. To qualify for the green box, WTO says a subsidy must not distort trade, or at most cause minimal distortion. **India's PDS does not come under Green Box. Hence, statement 2 is not correct.**
  - **Amber Box: All domestic support measures considered to distort production and trade (with some exceptions) fall into the amber box**. For instance, MSP, Procurement Price. sum total of subsidies on inputs like fertilizer. water, credit, power, etc. **Hence, statement 1 is correct.**
  - **Blue Box:** These are basically Amber Box subsidies, but they tend to limit the production, Any support that would normally be in the amber box, is placed in the blue box if the support also requires farmers to limit their production. • These measures are also exempt from reduction commitments.
  - **Special and Differential Treatment Box:** It comprises investment subsidies like tractors and pump sets. Agricultural input services like fertilizers to farmers etc. **SDT box subsidies can be given only to developing and low-income countries. Hence, statement 3 is not correct.**

**Q 57.D**

- Plea bargaining refers to a person charged with a criminal offence negotiating with the prosecution for a lesser punishment than what is provided in law by pleading guilty to a less serious offence. It is common in the United States and has been a successful method of avoiding protracted and complicated trials. As a result, conviction rates are significantly high there. **Hence statement 1 is correct.**
- Plea bargaining was introduced in 2006 as part of a set of amendments to the CrPC as Chapter XXI-A , containing Sections 265A to 265L.
- Unlike in the U.S. and other countries, where the prosecutor plays a key role in bargaining with the suspected offender, **the Indian code makes plea bargaining a process that can be initiated only by the accused;** further, the accused will have to apply to the court for invoking the benefit of bargaining.
- Cases for which the practice is allowed are limited. Only someone who has been charge-sheeted for an offence that does not attract the death sentence, life sentence or a prison term above seven years can make use of the scheme under Chapter XXI-A.
- **It is also applicable to private complaints of which a criminal court has taken cognisance. Hence statement 2 is correct.**
- Other categories of cases that cannot be disposed of through plea bargaining are those that involve **offences affecting the "socio-economic conditions" of the country or committed against a woman or a child below the age of 14. Hence statement 3 is correct.**

**Q 58.D**

- Capital gains mean the profit earned by an individual on the sale of his investment in assets such as stocks, real estate, bonds, commodities, etc. Basically, it is the 'gain' made on 'capital investment'. In India, capital asset, 'long-term capital' and 'short-term capital' are defined by the **Income Tax Act, 1961.**
- **A capital asset** is defined to include:
  - Any securities held by an FII which has invested in such securities in accordance with the regulations made under the SEBI Act, 1992.
  - However, the **following items are excluded from the definition of "capital asset":**
  - any stock-in-trade consumable stores or raw materials held for the purposes of his business or profession ;
  - **personal effects, that is, movable property** held for personal use. But **this excludes**
    - ✓ jewelry;
    - ✓ archaeological collections;
    - ✓ **drawings;**
    - ✓ **paintings;**
    - ✓ **sculptures** etc. **Hence statement 1 is not correct.**
- Any capital asset held by the taxpayer for a **period of more than 36 months** immediately preceding the date of its transfer will be **treated as long-term capital asset.** However, in respect of **certain assets like shares** (equity or preference) which are listed in a recognized stock exchange in India, units of equity-oriented mutual funds, listed securities like debentures and **Government securities, Units of UTI, and Zero-Coupon Bonds**, the period of holding to be considered is **12 months instead of 36 months. Hence statement 2 is not correct.**

**Q 59.A**

- Recently, the National Weather Forecasting Centre of the India Meteorological Department (IMD) forecasted Air Mass Inflow in Delhi along with the predicted ventilation coefficient and weather forecast.
- **Ventilation Index is a measure of the volumetric rate of wind transporting air horizontally. Hence statement 1 is correct.**
- It is a measure of the volumetric rate of wind transporting air horizontally in the mixed layer per unit distance in the vertical direction.
- The unit is in square meters per second or knot feet.
- In simple terms, it is an indicator that indicates the efficiency of the dispersion of pollutants in the atmosphere.
- The ventilation index is the multiplier of wind speed and mixing height.
- When the ventilation index value is low and harmful pollutants are close to the ground, air quality risks occur.
- **When the ventilation index value is low, there is also a visibility risk. Hence statement 2 is not correct.**
- It is a useful tool for air pollution management.

- **The ventilation index lower than 6000 m2/s with an average wind speed of less than 10 kmph is unfavourable for the dispersion of pollutants.**

**Q 60.C**

- The effects of these interactions can be positive, negative or neutral.
- Neutral interactions (00) have no effect on the growth of the population.
- Positive interactions (+ +) benefit both populations and if the relationship is mutually detrimental then the interaction is negative (- -).
- **Commensalism:** When one species maintains or provides a condition necessary for the **welfare of the other but does not affect its own well being by doing so**, the interaction is called commensalism (O+).
  - **An example is an epiphytic plant growing on the trunk of a tree. Hence Pair 1 is not correctly matched.**
  - The tree provides support and the epiphyte gets its nourishment through its aerial roots.
- **Amensalism:** The interaction (0-), in which one species reduces or adversely affects the population of another but remains unaffected itself is called amensalism.
  - An example may be the release of toxic substances by one organism that inhibits the growth and survival of another. This is known as allelopathy.
  - **An example is juglone a chemical substance released into the soil by black walnut tree which suppresses the growth of other plants near it. Hence pair 2 is not correctly matched.**
  - Amensalism may be considered a form of competition.
- **Mutualism:** Ecologically more important than both amensalism and commensalism is the relationship which benefits both populations (++) and such interactions are termed mutualism.
  - For example, bacteria present in termites and stomachs of ruminant animals help in the digestion of cellulose.
  - The bacteria get a warm environment and help their host to extract nutrients.
  - **The nitrogen-fixing bacteria Rhizobium found in the root nodules of leguminous plants is another common example of mutualism. Hence pair 3 is correctly matched.**

**Q 61.A**

- Reserve Bank of India (RBI) has recently issued a Retail Direct Scheme scheme to bring investments from individual investors into government securities.
- A **Government Security (G-Sec) is a tradeable instrument** issued by the Central Government or the State Governments. Such securities are short-term (usually called **treasury bills,** with original maturities of less than one year) or long-term (usually called **Government bonds** or dated securities with an original maturity of one year or more). In India, the **Central Government issues both, treasury bills and bonds or dated securities** while the **State Governments issue only bonds or dated securities,** which are called the State Development Loans (SDLs). G-Secs carry practically no risk of default and, hence, are called risk-free **gilt-edged instruments.**
  - **Treasury Bills (T-bills):** Treasury bills or T-bills, which are money market instruments, are short-term debt instruments issued by the Government of India and are presently issued in three tenors, namely, 91 day, 182 day and 364 day. Treasury bills are zero-coupon securities and pay no interest. Instead, they are issued at a discount and redeemed at the face value at maturity.
  - **Cash Management Bills (CMBs):** In **2010**, the Government of India, in consultation with RBI introduced a new short-term instrument, known as Cash Management Bills (CMBs), to meet the temporary mismatches in the cash flow of the Government of India. **The CMBs have the generic character of T-bills but are issued for maturities less than 91 days. Hence statement 1 is correct.**
  - **Dated G-Secs:** Dated G-Secs are securities which carry a fixed or floating coupon (interest rate) that is paid on the face value, on a half-yearly basis. Generally, the **tenor of dated securities ranges from 5 years to 40 years.**
- Investing in G-Secs has the following advantages:
  - Besides providing a return in the form of coupons (interest), G-Secs offer the maximum safety as they carry the Sovereign's commitment for payment of interest and repayment of principal.
  - **G-Secs can also be used as collateral to borrow funds in the repo market. Hence statement 2 is not correct.**
  - Securities such as State Development Loans (SDLs) and Special Securities (Oil bonds, UDAY bonds etc) provide attractive yields.
  - G-Sec prices are readily available due to a liquid and active secondary market and a transparent price dissemination mechanism.

- Besides banks, insurance companies and other large investors, smaller investors like Cooperative banks, Regional Rural Banks, Provident Funds are also required to statutory hold G-Secs.

- There is an **active secondary market in G-Secs.** The securities can be bought/sold in the secondary market either through
  - **Negotiated Dealing System-Order Matching (NDS-OM)** (anonymous online trading) or through
  - Over the Counter (OTC) and reported on NDS-OM or
  - NDS-OM-Web and
  - Stock exchanges.
- **NDS-OM:** In August 2005, **RBI introduced** an anonymous screen-based order matching module called NDS-OM. This is an order-driven electronic system, where the participants can trade anonymously by placing their orders on the system or accepting the orders already placed by other participants. Anonymity ensures a level playing field for various categories of participants.

**Q 62.B**

- Economist Pigou believed that **state intervention should correct negative externalities** due to the production of goods and services, which he considered a market failure. He suggested that this be **accomplished through taxation which is commonly known as Pigovian Tax. Hence statement 3 is correct**
- An **example of Pigovian tax, common in Europe, is a tax on plastic bags**, and sometimes even paper bags. This **encourages consumers to bring their own reusable bags from home to deter the use of plastic and paper.** Plastic is a by-product of burning fossil fuels and results in the damage of marine life, while paper bags encourage deforestation. About **40 countries impose carbon taxes on companies that burn coal, oil, or gas, which produce greenhouse gas emissions.** These emissions cause climate change, which can bring about more natural disasters, raise sea levels, and increasing droughts. **Thus leading to decreased consumption of Sin goods.** ( A sin tax is a type of Pigovian tax, which is levied on companies that create negative externalities with their business practices.) **Hence statement 2 is correct**
- The purpose of the **Pigovian tax is to redistribute the cost back to the producer or user of the negative externality.** A Pigovian tax drives a wedge that increases the price consumers have to pay, **thus leading to decreased Consumer Surplus. Hence statement 1 is correct**

**Q 63.C**

- Ukraine, a country located in eastern Europe, is the second-largest on the continent after Russia. The capital is Kyiv (Kiev), located on the Dnieper River in north-central Ukraine.
- Ukraine is bordered by Belarus to the north, Russia to the east, the Sea of Azov and the Black Sea to the south, Moldova and Romania to the southwest, and Hungary, Slovakia, and Poland to the west. In the far southeast, Ukraine is separated from Russia by the Kerch Strait, which connects the Sea of Azov to the Black Sea.

- **Hence, option (c) is the correct answer**.

**Q 64.D**

- The budget is based on the principle of annuality, that is, the Parliament grants money to the government for one financial year. **If the granted money is not spent by the end of the financial year, then the balance expires and returns to the Consolidated Fund of India. This practice is known as the 'rule of lapse'.** It facilitates effective financial control by the Parliament as no reserve funds can be built without its authorisation. However, the observance of this rule leads to heavy rush of expenditure towards the close of the financial year. This is popularly called as 'March Rush'.
- **Hence option (d) is the correct answer.**

**Q 65.C**

- Sand and dust storms are common meteorological hazards in arid and semi-arid regions of the world. Sand and dust particles are distinguished by their grain size.
  - Storms carrying bigger particles are known as Sand Storm
  - Storms carrying smaller particles are called Dust Storms.
- **They are usually caused by thunderstorms or strong pressure gradients associated with cyclones** – which increase wind speed over a wide area. **Hence, statement 1 is correct.**
- The dust storms are generated due to surface heating and by the strong pressure gradient. Once released from the surface, dust particles are raised to higher levels of the troposphere by turbulent mixing and convective updrafts.
- Marginal drylands are increasingly a source of major dust storms. These areas have fragile, delicately balanced eco-systems. Their degradation, called desertification, makes the soil less resilient to wind during prolonged drought.
- **Every dust storm is followed by a net radiative cooling at the surface** while the absorption of solar radiation by the dust floating in the atmosphere can cause heating in the middle to upper troposphere region. This manifests as a drop in the surface temperature immediately after the dust storms that enhances upper-air humidity. **Hence, statement 2 is correct.**

**Q 66.A**

- **Recently, the Haryana Legislative Assembly has passed a Bill that provides the right to recall members of Panchayati Raj institutions to those who elected them and gives women 50% reservation in these rural bodies.**
- **Right to Recall** is a process whereby the electorate has the power to remove the elected officials before the expiry of their term. **It is an example of the instrument of direct democracy. Hence statement 1 is correct.**
- **In India, it is neither available for members of the State Legislative Assembly and not the Lok Sabha. Hence statement 2 is not correct.**

**Q 67.D**

- **Hill station during British India:** Hill stations were a distinctive feature of colonial urban development. The founding and settling of hill stations were initially connected with the needs of the British army. Hill stations became strategic places for billeting troops, guarding frontiers, and launching campaigns against enemy rulers.
  - **Shimla** (present-day Shimla) was founded during the course of the Gurkha War (1815-16);
  - the **Anglo-Maratha War of 1818** led to British interest in Mount Abu; and
  - **Darjeeling** was wrested from the rulers of Sikkim in 1835. **Hence option (d) is the correct answer.**

**Q 68.B**

- The Cool Temperate Eastern Margin (Laurentian) Climate is an intermediate type of climate between the British and the Siberian type of climate. **It has features of both the maritime and the continental climates.**
- Laurentian type of climate is found only in two regions and that too only in the northern hemisphere.
  - North-eastern North America, including eastern Canada, north-east U.S.A., and Newfoundland. This may be referred to as the North American region.
  - Eastern coastlands of Asia, including eastern Siberia, North China, Manchuria, Korea, and northern Japan.

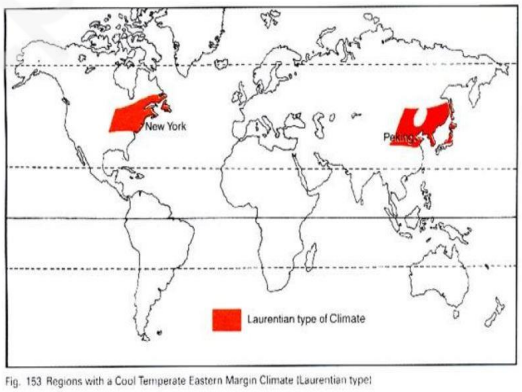

Fig. 153 Regions with a Cool Temperate Eastern Margin Climate (Laurentian type)

- The Laurentian type of climate has cold, dry winters and warm, wet summers. Winter temperatures may be well below freezing point and snowfalls to quite a depth. Summers are as warm as the tropics (70° – 80°F.) and if it were not for the cooling effects of the off-shore cold currents from the Arctic the summer might be even hotter.
- The predominant vegetation of the Laurentian type of climate is cool temperate forest. The heavy rainfall, the warm summers, and the damp air from fogs, all favor the growth of trees. Generally speaking, the forest-tend to be coniferous north the 50°N. the parallel of latitude.
- **Hence, option (b) is the correct answer.**

**Q 69.C**

- **A Non-Banking Financial Company (NBFC)** is a company registered under the Companies Act, 1956 engaged in the **business of loans and advances, acquisition of shares/debentures/securities** issued by Government but **does not include** any institution whose **principal business is that of agriculture activity, industrial activity,** purchase or sale of any goods (other than securities) or providing any services and sale/purchase/construction of the immovable property.
- Financial activity as a **principal business** is when a company's financial assets constitute **more than 50 percent of the total assets** and income from financial assets constitute more than 50 percent of the gross income. **The Reserve Bank has been given the powers under the RBI Act 1934** to register, lay down policy, issue directions, inspect, regulate, supervise and exercise surveillance over NBFCs that meet the 50-50 criteria of principal business.
- However **not all the NBFCs are regulated by RBI.** Merchant Banking Companies, Stock Exchanges, Companies engaged in the business of stock-broking/sub-broking, Venture Capital Fund Companies, Nidhi Companies, Insurance companies, and Chit Fund Companies are NBFCs but they are not regulated by RBI.
    - **Merchant Banker/Venture Capital Fund Company**/stockbrokers are **regulated by the Securities and Exchange Board of India. Hence options 1 and 3 are not correct.**
        - ✓ **Merchant banks** refer to the financial institution that conducts underwriting, loan services, financial advising, and fundraising services for large corporations and high-net-worth individuals (HWNIs).
        - ✓ **Venture capital funds** are pooled investment funds that manage the money of investors who seek private equity stakes in startups and small- to medium-sized enterprises with strong growth potential.
    - **Insurance companies** are regulated by **Insurance Regulatory and Development Authority.**
    - Similarly, **Chit Fund Companies** are regulated by the respective **State Governments** and
    - **Nidhi Companies** are regulated by the **Ministry of Corporate Affairs, Government of India. Hence option 2 is not correct**.
        - ✓ **A Nidhi company** is a type of company in the Indian non-banking finance sector, recognized under section 406 of the Companies Act, 2013. Their core business is borrowing and lending money between their members.
- Until August 9, 2019, **Housing Finance Companies (HFCs)** were regulated by the National Housing Bank (NHB). However, the same has **now been transferred to the RBI** through an amendment to the National Housing Bank Act, 1987. **Hence option 4 is correct.**

**Q 70.D**

- **Qutbuddin Aibak (AD 1206–1210)**
- With Qutbuddin Aibak, begins the period of **Mamluk Sultans or the slave dynasty.** Mamluk is an Arabic word meaning "owned". It was used to distinguish the imported Turkish slaves meant for military service from the lower slaves used as domestic labour or artisan. He belonged to
- The Mamluk Sultans ruled from AD 1206 to 1290.
- **Qutbuddin Aibak was a Turkish slave who had risen to high rank in Muhammad Ghori's army.** After Muhammad Ghori's death in AD 1206, the control of his Indian possessions was passed on to Qutbuddin Aibak.
- Muhammad Gori is also known as **Shahabuddin Muhammad.**
- **Aibak was the first independent Muslim ruler of Northern India, the founder of the Delhi Sultanate.**
- Aibak was able to win over his enemies by conciliatory measures as well as a display of power. He defeated Yaldauz and occupied Ghazni. The successor of Jaichand, Harishchandra had driven out the Turks from Badayun and Farukhabad. **Aibak re-conquered both Badayun and Farukhabad.**
- Aibak re-conquered both Badayun and Farukhabad. Qutbuddin Aibak was brave, faithful and generous.

- **Due to his generosity, he was known as "Lakh Baksh". Most of the scholars consider Aibak as the real founder of Mulsim rule in India. Hence option (d) is the correct answer.**

**Q 71.A**

- **Recent Context**: The Kerala Nattukala Kshema Sabha (KNKS), an outfit that works for the promotion of local art forms in Kerala, has demanded that Karakattam (also known as Kumbakkali in certain parts) be recognized as the agricultural art form of Kerala.
- **Karakattam is an ancient and traditional art form in the folk dance genre originating in the state of Tamil Nadu. Legend has it that the art form came into prominence after it was conceived to offer praise and oblations in the glory of the rain goddess Mariamman.**
  - **Though Karakattam is mostly famous in Tamil Nadu, it's performed in different parts of Kerala as well. Hence option (a) is the correct answer.**
- **It is performed at festivals, conferences, roadshows, and primarily at Mariamman festivals. It is one of the many creative traditions that owe their existence to Mariamman, the rain goddess.**
- The earliest mention of this particular art form can be traced back to the ancient texts in Tamil literature. An ancient epic was written in the early stage and formative years of Tamil literature is stated to mention that the origin of Karakattam is from the heritage dance form Bharatham with generous contributions from other prominent dance forms present in the history of Tamil performing arts forms such as Bharatanatyam.
- This particular dance form has several interesting sequences wherein the performer distorts their body in various postures or mudras so as to mimic scenes depicting the greatness of the Goddess of Rain. The dance recital is the way of the associated culture to relate as an offering to please the forces that be and the Rain goddess for a healthy supply of rainfall. The dance recital is accompanied by any song of Carnatic origin.
- **It is performed by both men and women.**
- The premises of the attire and cultural significance of this dance recital include distinctly colourful props and dress with resplendently painted faces. The dance form involves balancing a large number of pots of decreasing size on the head of the dancers while dancing and expressing the theme of the dance to the audience through their movements. It is performed as an entertainment form as well as a spiritual practice.

**Q 72.D**

- A very futuristic spice, the turmeric continues to inspire, educate and alleviate. Hailed as a wonder spice, it owes its origin to the plant called Curcuma longa. Turmeric is basically a dried rhizome and is also known as the "country cousin" of ginger.
- Turmeric has numerous species and is widely cultivated in the tropics. However, India has the honor of producing nearly all of the world's turmeric crops and its population consumes 80% of it.
- In the state of Tamil Nadu, in South India, the city of Erode is the world's largest producer of turmeric, followed by Sangli, a city in the state of Maharashtra. Erode is also known as the "yellow city" or "turmeric city".
- Turmeric requires a warm and humid climate. It can be grown in diverse tropical conditions from sea level to 1500mm above MSL within a temperature range of 20-30°C with a rainfall of 1500 mm or more per annum or under irrigated conditions. Though turmeric thrives in different types of soil ranging from light black loam, red soils to clayey loams, rich loamy soils having natural drainage and irrigation facilities are the best. Turmeric cannot stand water stagnation or alkalinity.
- **Hence, option (d) is the correct answer.**

**Q 73.C**

- **François Bernier**, a Frenchman, was a doctor, political philosopher and historian. Like many others, he came to the Mughal Empire in search of opportunities. He was in India for twelve years, from 1656 to 1668, and was closely associated with the Mughal court, as a physician to Prince Dara Shukoh, the eldest son of Emperor Shah Jahan, and later as an intellectual and scientist, with Danishmand Khan, an Armenian noble at the Mughal court.
- Bernier travelled to several parts of the country, and wrote accounts of what he saw, frequently comparing what he saw in India with the situation in Europe. He dedicated his major writing to Louis XIV, the king of France, and many of his other works were written in the form of letters to influential officials and ministers. In virtually every instance Bernier described what he saw in India as a bleak situation in comparison to developments in Europe.

- The expansion of India's foreign trade led to increasing imports of silver and gold into India during the seventeenth century; so much so that Bernier says that 'gold and silver, after circulating over every part of the world, is finally buried in India which is the sink of gold and silver.' **Hence option (c) is the correct answer.**
- Bernier's Travels in the Mughal Empire is marked by detailed observations, critical insights and reflection. His account contains discussions trying to place the history of the Mughals within some sort of a universal framework. He constantly compared Mughal India with contemporary Europe, generally emphasising the superiority of the latter. His representation of India works on the model of binary opposition, where India is presented as the inverse of Europe. He also ordered the perceived differences hierarchically, so that India appeared to be inferior to the Western world.
- **Jean-Baptiste Tavernier** is a seventeenth-century traveller and a diamond merchant. He elaborately discussed diamonds and diamond mines of India. He travelled to India at least six times. He was particularly fascinated with the trading conditions in India, and compared India to Iran and the Ottoman empire.
- **Nicolo Conti** is an Italian traveller who visited Vijayanagara in 1420 and had left us a graphic account of it.
- **Afanasii Nikitich Nikitin** is a Russian traveller and merchant who visited Vijayanagara Empire during the 15th century. He observed that the people of the Deccan went bare-footed.

**Q 74.C**

- Recently, the National Green Tribunal (NGT) has directed Delhi and Haryana to enforce the Environment Management Plans that the two governments have prepared for the rejuvenation and protection of the Najafgarh jheel, a transboundary wetland.
- **Najafgarh Lake, Najafgarh Marsh or Najafgarh Jheel**, fed by Sahibi River, used to be a vast lake in the southwest of Delhi in India near the town of Najafgarh from which it takes its name.
- It was connected to the river Yamuna by a natural shallow nullah or drain called the Najafgarh nullah.
- The lake is largely filled with sewage from Gurugram and the surrounding villages of Delhi.
- Once spread over 226 sq km, the water body straddling Delhi and Gurugram has shrunk to just seven sq km due to rampant encroachment.
- **The Najafgarh Jheel is a critical natural infrastructure for the region, buffering floods, treating wastewater, recharging groundwater (with high potential for water supply to significant population) and providing habitat to numerous plant, animal and bird species.**
- The presence of 281 bird species, including several threatened ones such as Egyptian vulture, Sarus Crane, Steppe Eagle, Greater Spotted Eagle, Imperial Eagle and those migrating along the Central Asian Flyway has been reported at the lake.
- **Hence option (c) is the correct answer.**

**Q 75.B**

- **Chintamani Padya Natakam:** After reviewing the contents of a 100-year-old play named 'Chintamani Padya Natakam', the Andhra Pradesh government has banned it.
  - 'Chintamani Padya Natakam' was written **in 1920 by playwright Kallakuri Narayana Rao**, who was also a social reformer.
  - **The play is about Chintamani, a courtesan and a devotee of Lord Krishna, who finds salvation by singing bhajans.**
  - She is courted by Subbi Shetty, a businessman from the Arya Vysya community, who loses his wealth and family due to his attraction to her.
  - The original play had a social message, but over the years, it has been modified purely for entertainment.
  - Social message - In the play, the writer **explains how people neglect their families by falling prey to certain social evils.**
  - It was aimed to create **awareness of the Devadasi system** and how the flesh trade was ruining many families at that particular period.
- **Hence option (b) is the correct answer.**

**Q 76.D**

- The India National Tech Excellence Award for Women 2022 was instituted by a statutory body of the Department of Science and Technology, Technology Development Board for Azadi Ka Amrit Mahotsav. **Hence, statement 1 is not correct.**

- **To recognize the outstanding contribution of women scientists/entrepreneurs in commercializing innovative indigenous technologies, Technology Development Board is launching the National Tech Excellence Award under the following two categories :**
  - **A: National Women Scientist Award for Excellence in Translational Research**
  - **B: National Women Entrepreneurs Awards**
- Both the awards will be presented in two distinct categories:
  - Senior (45 yrs and above)
  - Young (Below 45 years). **Hence, statement 2 is not correct.**

| Name | Categories | Award |
|---|---|---|
| National Women Scientist Award for excellence in Translational Research | Senior | Rs.3.00 lakhs |
| | Young | Rs 1.00 Lakhs |
| National Women Entrepreneur Award | Senior | Rs. 3.00 lakhs |
| | Young | Rs 1.00 Lakhs |

- **Two awards each for the Senior and Young category totaling eight awards will be presented on the occasion of Women's Day celebrated on 8th March this year. The awards will be sector agnostic. The committee may change the number of awards to be given or may defer if the entries are not found suitable.**

**Q 77.A**

- **Recently, the Ministry of Coal has set up Mission Coking Coal to evolve a road map for increasing production and utilization of domestic coking coal. The main recommendations of the Committee are:**
  - Identification of additional coking coal blocks for production by Coal India Ltd (CIL) and private sector and auction of CBM overlap coking coal blocks.
  - Adopting existing advanced technology for the beneficiation of coking coal, developing a policy framework for disposal of washery rejects and middlings may be reviewed and made more elaborate.
  - Allocation of coking coal linkages by CIL to private washeries, setting up of coking coal washeries on aggregator model basis.
  - Formulating import parity-based pricing mechanism for domestic coking coal factoring the quality parameters.
  - Incentive-based framework to encourage steel sector for utilization of stamp charging technology and invest into R&D initiatives for redesigning blast furnaces for utilization of domestic coking coal.
  - Recommended that CIL should publish mine-wise/seam-wise details of coking properties of coal on its website and purchaser may be allowed to choose from a specific source.
  - Tax incentives may be provided to the entities for manufacturing underground mining machinery and entities engaged in underground mining.
- **As of 2018 India's coking coal reserves are (in million tonnes)**

| Type of Coal | Proved/Measured | Indicated | Inferred | Total |
|---|---|---|---|---|
| (A) Coking :- | | | | |
| -Prime Coking | 4649 | 664 | 0 | 5313 |
| -Medium Coking | 13914 | 11709 | 1879 | 27502 |
| -Semi-Coking | 519 | 995 | 193 | 1708 |

- **Jharia coalfields in Jharkhand hold the major share of quality coking coal reserves of India.**
  - **The production of coking coal in the country was at 41 MT in FY 2019 which has increased to 53 MT in FY 2020.**
- **India imports most of its coking coal from Australia** and followed by countries like the USA, Canada, Russia, etc**. Hence, statement 1 is correct.**
- **About 50 MT of coking coal is imported by India on an annual basis and the value of coking coal imported in FY 2020-21 was Rs. 45,4354 million. In 2020-21 India imported about Rs. 70,6017 millions of non-coking coal. Hence statement 2 is not correct.**
- **In the table given below: Year Wise Import of Coal and Coke to India during Last Ten Years(Quantity in Million Tonnes & Value in Million Rs.)**

| Year | Coking Coal | | Non-Coking Coal | | Total Coal | | Coke & Others Coal Products | | Lignite | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| 2011-12 | 31.80101 | 424692.34 | 71.05162 | 363683.49 | **102.85263** | **788375.83** | 2.36469 | 47584.54 | | |
| 2012-13 | 35.55697 | 378398.09 | 110.22847 | 490056.94 | **145.78545** | **868455.02** | 3.08065 | 56918.82 | 0.00065 | 10.22 |
| 2013-14 | 36.87214 | 348318.65 | 129.98489 | 574973.16 | **166.85702** | **923291.81** | 4.17053 | 67994.89 | 0.00127 | 23.73 |
| 2014-15 | 43.71529 | 337655.59 | 174.06751 | 707410.50 | **217.78280** | **1045066.09** | 3.29388 | 43806.15 | | 17.03 |
| 2015-16 | 44.56117 | 282519.09 | 159.38809 | 577818.53 | **203.94926** | **860337.62** | 3.07163 | 32683.54 | 0.00105 | 14.83 |
| 2016-17 | 41.64379 | 412300.61 | 149.30926 | 590013.33 | **190.95305** | **1002313.94** | 4.34648 | 54019.35 | 0.01912 | 433.29 |
| 2017-18 | 47.00325 | 595226.36 | 161.24542 | 789543.41 | **208.24867** | **1384769.77** | 4.58478 | 91524.74 | 0.01041 | 116.50 |
| 2018-19 | 51.83768 | 720497.64 | 183.51033 | 988707.26 | **235.34801** | **1709204.90** | 4.93094 | 120644.85 | 0.01937 | 403.43 |
| 2019-20 | 51.83275 | 612668.32 | 196.70383 | 914652.23 | **248.53658** | **1527320.55** | 2.87455 | 60256.67 | 0.05425 | 1074.46 |
| 2020-21 | 51.28828 | 454354.82 | 163.70662 | 706017.21 | **214.99491** | **1160372.03** | 2.45729 | 44688.59 | 0.01886 | 409.24 |

**Q 78.B**

- Co-lending or co-origination is a set-up where banks and non-banks enter into an arrangement for the joint contribution of credit for priority sector lending. The primary aim of Co-Lending Model is to improve the flow of credit to the unserved and underserved segment of the economy at an affordable cost. This happens as banks have lower cost of funds and NBFCs have greater reach beyond tier-2 centres.
- The Reserve Bank of India (RBI) had come out with the co-origination framework in 2018 **allowing banks and NBFCs to co-originate loans. These guidelines were later amended in 2020 and rechristened as co-lending models (CML) by including Housing Finance Companies. Hence statement 1 is correct.**
- As per RBI norms, **a minimum 20 percent of the credit risk by way of direct exposure shall be on NBFC's books** till maturity and the balance will be on the bank's books. Upon maturity, the **repayment or recovery of interest is shared by the bank and NBFC in proportion to their share of credit and interest. Hence statement 3 is not correct.**
- This joint origination allows banks to claim priority sector status in respect of their share of credit. **NBFCs act as the single point of interface for the customers** and a tripartite agreement is done between the customers, banks and NBFCs. **Hence statement 2 is not correct.**

**Q 79.C**

- Recently, the **National Statistical Office (NSO), Ministry of Statistics and Programme Implementation** released the advance estimates of National Income at both Constant (2011-12) and Current Prices, for the financial year 2021-22 along with the corresponding estimates of expenditure components of the Gross Domestic Product (GDP).
- **The Expenditure components as a percentage of GDP are:**

| **Component** | **Share of GDP (2021-22)** |
|---|---|
| Private Final Consumption Expenditure | 54.8 |
| Gross Fixed Capital Formation | 32.9 |
| Imports | 25.1 |
| Exports | 21.3 |

- **Hence option (c) is the correct answer.**
- The **Private Final Consumption Expenditure (PFCE)** is defined as the expenditure incurred on the final consumption of goods and services by the resident households and non-profit institutions serving households
- **Gross fixed capital formation (GFCF),** also called "investment", is defined as the acquisition of produced assets (including purchases of second-hand assets), including the production of such assets by producers for their own use, minus disposals. The fixed asset includes construction machinery, equipment etc.

**Q 80.D**

- **Article 61 of the Indian Constitution** provides for the procedure for impeachment of the Indian President.
  - It states that the Indian President can be impeached for **violation of the Constitution.**

- The President of the USA can be removed from office for **"treason, bribery, or other high crimes and misdemeanours"**.
    - What constitutes these "high crimes" and "misdemeanours" (misdemeanours), however, is not clearly spelt out. **Hence statement 1 is not correct.**
- Article 61 of the Indian Constitution states that when a President is to be impeached for violation of the Constitution, **the charge shall be preferred by either House of Parliament.**
- **Either Lok Sabha or Rajya Sabha can initiate the process for the removal of the President of India. Hence statement 2 is not correct.**
- Under the Constitution of the USA, the House of Representatives (Lower House) has "the sole power of impeachment" while the Senate (Upper House) has "the sole power to try all impeachments".
- **Only the Lower House which is the House of Representatives has the power to initiate the process for impeachment.**
- The Chief Justice of the US Supreme Court has the duty of presiding over impeachment trials in the Senate.

**Q 81.A**

- **Astronomers have recently found an absolute monster of a galaxy. Lurking some 3 billion light-years away, Alcyoneus is a giant radio galaxy reaching 5 megaparsecs into space. That's 16.3 million light-years long and constitutes the largest known structure of galactic origin.**
- **Messier 87 is an elliptical galaxy located some 53 million light-years from us in the constellation of Virgo.**
    - **Astronomers using NSF's Karl G. Jansky Very Large Array have recently captured unprecedented high-fidelity radio images of a jet of material propelled from the core of the giant elliptical galaxy Messier 87.**
- Recently, a group of astronomers using radio waves discovered two "invisible" galaxies hiding behind a curtain of dust near the dawn of the universe. This curtain of dust was hitherto obscuring the galaxies from their view. The galaxies have been named REBELS-12-2 and REBELS-29-2 and they are among the most distant known galaxies.
- **Hence, option (a) is the correct answer.**

**Q 82.B**

- **Demutualization** refers to the transition process of an exchange from a "mutually-owned" association to a company "owned by shareholders". In other words, transforming the legal structure of an exchange from a mutual form to a business corporation form is referred to as demutualization. The above, in effect, means that after demutualization, the ownership, the management, and the trading rights at the exchange are segregated from one another.
- In a **mutual exchange,** the three functions of ownership, management, and trading are intervened into a single Group. Here, the broker members of the exchange are both the owners and the traders on the exchange and they further manage the exchange as well. A **demutualized exchange, on the other hand, has all these three functions clearly segregated, i.e. the ownership, management, and trading are in separate hands. Hence statement 2 is correct.**
- **Corporatization** is the process of **converting the organizational structure of the stock exchange from a non-corporate structure to a corporate structure.** Traditionally, some of the stock exchanges in India were established as "Association of persons", e.g. the Stock Exchange, Mumbai (BSE), Ahmedabad Stock Exchange (ASE). Corporatization of such exchanges is the process of converting them into incorporated Companies. **Hence statement 1 is not correct.**
- There are **19 recognized stock exchanges in India.** Apart from NSE, all stock exchanges whether established as corporate bodies or Association of Persons were earlier non-profit making organizations. As per the demutualization scheme mandated by SEBI, all stock exchanges other than the Coimbatore stock exchange have completed their corporatization and demutualization process. Accordingly, **out of 19 stock exchanges 18 are corporatized and demutualized** and are functioning as for-profit companies, limited by shares. **Hence statement 3 is correct.**

**Q 83.D**

- The sedition law which is enshrined in Section 124A of the Indian Penal Code (IPS) was introduced by the British government in 1870 to tackle dissent against colonial rule.
- **The original draft of the IPC, which was enacted in 1860, did not consist of this law. Hence statement 2 is not correct.**

- Section 124A states the following, "Whoever, by words, either spoken or written, or by signs, or by visible representation, or otherwise, brings or attempts to bring into hatred or contempt, or excites or attempts to excite disaffection **towards, the Government established by law in India**, shall be punished with imprisonment for life, to which a fine may be added; or, with imprisonment which may extend to three years, to which a fine may be added; or, with fine." **Hence statement 1 is not correct.**
- According to the Library Of Congress blog, **the first known instance of the application of the law was the trial of newspaper editor Jogendra Chandra Bose in 1891. Hence statement 3 is not correct.**
- Other prominent examples of the application of the law include the trials of Tilak and Gandhi. Apart from this, Jawaharlal Nehru, Abul Kalam Azad and Vinayak Damodar Savarkar were also charged with sedition.
- **In 1922, Gandhi was arrested on charges of sedition in Bombay for taking part in protests against the colonial government.**
- He was sentenced to six years in prison but was released after two years because of medical reasons.

**Q 84.C**

- **Kamala Devi Chattopadhyay was a freedom fighter, actor, social activist, art enthusiast, politician and feminist**.
    - She enrolled herself in the nationalist struggle as a member of the Congress party. **She had the unique distinction of being the first woman in India to run for political office. Kamaladevi competed for a seat in the Madras Legislative Assembly and lost by a mere 55 votes.**
    - **During the Civil Disobedience Movement of 1930, she addressed meetings and picketed foreign cloth and liquor shops. She had persuaded Gandhiji not to restrict the protests to men alone**. As a result of her persuasion, this March became the first nationalist activity in which women participated in large numbers. Kamaladevi was herself one of the numerous women who courted arrest by breaking the salt or liquor laws during this movement. **Hence option (c) is the correct answer.**
    - She was in-charge of the women's wing of the Hindustan Seva Dal.
    - She was also a key figure in the international socialist feminist movement. From the late 1920s to the 1940s and beyond, she became an emissary for Indian women and political independence. She also advocated transnational causes – such as racism and political and economic equity between nations. She also attended the International Alliance of Women in Berlin in 1929.
    - She was the very first among educated women in India to appear on the public stage and to tour with a drama troupe all over the country to popularise theatre. Smt. Kamaladevi is Founder- President of the National Theatre Centre of India, which is affiliated to the International Theatre Institute of UNESCO.
    - She has received many national and international honours, which include the Watumall Foundation Award, the Ramon Magsaysay International Award, the Desikottama from Viswabharati and the Padma Bhushan. She also set up the Indian National Theatre (INT) in 1944, what we today know as National School of Drama.
- **Sarojini Naidu was an Indian political activist and poet.** A proponent of civil rights, women's emancipation, and anti-imperialistic ideas, she was an important figure in India's struggle for independence from colonial rule. Naidu's work as a poet earned her the sobriquet 'the Nightingale of India', or 'Bharat Kokila' by Mahatma Gandhi because of the color, imagery, and lyrical quality of her poetry.
    - Annie Besant was a British socialist, theosophist, women's rights activist, writer, orator, educationist, and philanthropist. Regarded as a champion of human freedom, she was an ardent supporter of both Irish and Indian self-rule. She was a prolific author with over three hundred books and pamphlets to her credit. As an educationist, her contributions included being one of the founders of the Banaras Hindu University.
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- **Kadambini Ganguly:** She was one of the first two female graduates from India. She also went on to become one of the first female doctors of the country who were certified to practise western medicine. Kadambini married Dwarakanath Ganguly a Brahmo Samaj reformer.She became the first woman to be on the dais at a session of the Indian National Congress.

**Q 85.A**

- According to a study published in **Current Science,** the Black-and-orange Flycatcher (BOF) could suffer a loss of 31% of its range respectively by 2050 due to climate change. BOF is a unique among the Ficedula flycatchers in having rufous coloration on its back. The male is distinctly black headed with black wings. The female has the black replaced by dark brown and has a light eye-ring.
- **Statement 1 is correct:** It is endemic to western ghats as it prefer areas with high leaf litter and undergrowth in open shola grassland habitats. The most suitable locations for BOF is in the Anamalai and Nilgiri Hills lie outside the protected area network. Specialised habitats like shola are under threat from various anthropogenic activities and invasive plant species.
- **Statement 2 is not correct:** Its status in The International Union for Conservation of Nature Red List of Threatened Species (IUCN) Red List of Threatened Species is 'least concerned'.

**Q 86.C**

- A pollinator helps carry pollen from the male part of the flower (stamen) to the female part of the same or another flower (stigma).
- Movement of pollen must occur for plant to become fertilized and produce fruits, seeds, and young plants.
- Some plants are self-pollinating, while others are fertilized by pollen carried by wind, water or pollinators.
- **Pollinators include insects and animals such as bees, wasps, moths, butterflies, birds, flies and small mammals, including bats. Hence statement 1 is not correct.**
- The top three global causes of pollinator loss are **habitat destruction, land management — primarily grazing, fertilisers and crop monoculture of farming — and widespread pesticide use. Hence statement 2 is correct.**
- **The biggest risk to humans is crop pollination deficit, fall in quality and quantity of food and biofuel crops. Hence statement 3 is correct.**

**Q 87.D**

- **A legal tender** is a coin or a banknote that is legally tenderable for discharge of debt or obligation. Legal Tenders cannot be refused by any citizen of the country for settlement of any kind of transaction. **Cheques were drawn on savings or current accounts**, however, can be refused by anyone as a mode of payment. **Hence cheques are not considered legal tenders. Hence statement 1 is not correct.**
- In order to curb tax evasion in the country, under **Section 269ST, the Income Tax Act, 1961** restricts any person from receiving an **amount of Rs 2 lakh or more in cash, from a person in a day, in respect of a single transaction** or in respect of transactions relating to one event or occasion from a person. Such norm is not applicable to electronic transactions, cheques, and bank drafts. **Hence statement 2 is not correct.**

**Q 88.A**

- The Federal Reserve System often referred to as "the Fed," is the central bank of the United States. If the Fed increases the interest rates, it would impact India in the following ways:
- The hikes will lead to a rise in yields on US treasuries and a stronger dollar. The rise in yields narrows the rate differential between the US and India, making Indian bonds less attractive for foreign portfolio investors.
    - Global investors borrow in currencies with zero or low interest rates to invest in assets across the world. This is called carry trade, which is partly responsible for the raging rally in stocks in India and elsewhere. As rates begin moving up, the carry trade can reverse causing global sell-off.
- Hence when interest rates in US increase, the spread between US and Indian government bonds will narrow causing global funds to pull money out of Indian G-secs. **RBI will therefore have to raise interest rates in India** to prevent FPI outflows from the Indian bond market. **Hence statement 2 is correct.**
- Hence the rate hike and fund reduction are likely to impact the availability and cost of overseas finance. **Foreign portfolio flows into the Indian equity and bond markets could slow** or even reverse. **Hence statement 1 is not correct.**
- The US dollar strengthens as interest rates of dollar-denominated securities begin moving higher. If FPIs continue to pull money out of stock and bond markets that **will weaken the rupee. Hence statement 3 is not correct.**

**Q 89.D**

- **Society for Worldwide Interbank Financial Telecommunications (SWIFT)** is a member-owned cooperative that provides **safe and secure financial transactions for its members.** This payment network allows individuals and businesses to take electronic or card payments even if the customer or vendor uses a different bank than the payee. SWIFT works by assigning each member institution a unique ID code that identifies not only the bank name but the country, city, and branch.
- Based in Belgium, it is **overseen by the central banks from eleven industrial countries:** Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States, besides Belgium. **Hence statement 1 is not correct.**
- The **community of SWIFT includes Banks, Broker/dealers, Investment managers,** Corporates Exchanges, Clearinghouses, and Other users of secure financial communications. Companies and institutions must submit an application to become authorized SWIFT users in order to connect to SWIFT. **Hence statement 2 is not correct.**
- SWIFT is solely a carrier of messages. It **does not hold funds nor does it manage accounts on behalf of customers,** nor does it store financial information on an ongoing basis. As a data carrier, SWIFT transports messages between two financial institutions. This activity involves the secure exchange of proprietary data while ensuring its confidentiality and integrity. **Hence statement 3 is not correct.**

**Q 90.C**

- In many cases, the living beings of an ecosystem, modify their environment considerably by their growth, death and decay.
- The changed conditions lead to the establishment of new kinds of species in that area.
- The whole process goes on and on, that is, there is the replacement of one kind of community with another and such a succession process is called autogenic succession.
- **Hence autogenic succession results because of the changes brought about in the habitat by the members of the community themselves. Hence statement 1 is correct.**
- In some cases, the changes brought about in the habitat are caused by external agencies and not by the existing vegetation itself and this is called **allogenic succession.**
- **Allogenic succession** may occur in a **highly disturbed or eroded area or in ponds where nutrients and pollutants** enter from outside and modify the environment and in turn the communities. **Hence statement 2 is correct.**

**Q 91.B**

- Sea cucumbers are echinoderms—like starfish and sea urchins.
  - **Habitat:** All sea cucumbers are ocean dwellers, though some inhabit the shallows and others live in the deep ocean.
    - ✓ They live on or near the ocean floor—sometimes partially buried beneath it.
  - **Dite:** Sea cucumbers **are omnivores**, feed on tiny particles like algae, minute aquatic animals, or waste materials. **Hence statement 1 is not correct.**
- The Gulf of Mannar and Palk Bay areas is the current hotspot for sea cucumber poaching.
- In India, the species is listed under Schedule I of the Wildlife Protection Act (WPA), 1972, akin to the protection for a tiger, leopard, or elephant. **Hence statement 2 is correct.**
- Sea cucumbers cannot be transported in any form for commercial use and are also protected under the **Convention on International Trade in Endangered Species (CITES),** A **total ban on harvesting of sea cucumbers was imposed in 2001 under the WPA. Hence statement 3 is correct.**
- Lakshadweep has created Dr. KK Mohammed Koya Sea Cucumber Conservation Reserve. It is the world's first conservation area for sea cucumbers. **Hence statement 4 is not correct.**

**Q 92.A**

- Oxygen is vital for life on Earth and is mainly produced by plants, algae, and cyanobacteria via photosynthesis. A few microbes are known to make oxygen without sunlight, but so far they have only been discovered in very limited quantities and in very specific habitats. **But the ocean living microbe Nitrosopumilus maritimus and its cousins, called ammonia-oxidizing archaea play a greater role in this regard.** Nitrosopumilus maritimus is able to make oxygen in a dark environment. Not much that it would influence oxygen levels on Earth, but enough to keep itself going. For this reason, they are more abundant in water where there is no oxygen. The impact the nitrogen cycle by using the oxygen present in water for the production of gaseous nitrogen and by doing so they remove bioavailable nitrogen from the environment.
- **Hence option (a) is the correct answer.**

**Q 93.B**

- Recently, the **World Economic Forum has released the report titled 'Global Cybersecurity Outlook 2022**'. **Hence option (b) is the correct answer.**
- It offers insights related to the near-term future cybersecurity challenges and develops concrete solutions to address them. The report also highlights measures that need to be taken to enhance cyber resilience within organizations and the wider ecosystem.
- **It is Global Cybersecurity Index (and not Global Cybersecurity Outlook)** that is released by the **International Telecommunication Union (ITU),** the United Nations (UN) agency for information and communication technologies (ICT).
- **Other reports released by the World Economic Forum are**
  - Travel and Tourism Competitiveness Report
  - Global Competitiveness Report
  - Enabling Trade Report
  - Global Energy Architecture PerformanceIndex Report
  - Global Environment Performance Index
  - World Power Language Index
  - Inclusive Development Index
  - Human Capital Index
  - Global Gender Gap Index

**Q 94.B**

- **Infrastructure for the Resilient Island States or IRIS** is the first major initiative by the Coalition for Disaster Resilient Infrastructure (CDRI) started by India in 2019. **Hence statement 1 is not correct.**
- CDRI aims to promote disaster-resilient infrastructure.
- It was the sidelines of COP-26, a climate summit in Glasgow in 2021.
- It is aimed at achieving sustainable development through a systematic approach to resilient, sustainable, and inclusive infrastructure in **Small Island Developing States (SIDS). Hence statement 2 is correct.**

**Q 95.D**

- Recently, the Karnataka High Court is hearing a challenge to the constitutionality of the state government's ban on students wearing a hijab in educational institutions.
- **There is an argument on whether the state can justify the ban on the ground that it violates 'public order'.**
- **Article 25 of the Constitution of India** states that subject to **public order, morality, and health** and to the other provisions of this Part, all persons are equally entitled to freedom of conscience and the right freely to profess, practice, and propagate religion. **Hence option (d) is the correct answer.**

**Q 96.B**

- The President from time to time **summons** each House of Parliament to meet.
- **Prorogation** terminates a sitting but also a session of the House and it is done by the President.
- **Adjournment** only terminates a sitting and not a session of the House. It is done by the **Speaker** in the case of Lok Sabha. **Hence option (b) is the correct answer.**
- **Dissolution** of Lok Sabha is done by the President.

**Q 97.D**

- **Technologies used for tiger census:**
  - **MSTrIPES (Monitoring System for Tigers: Intensive Protection and Ecological Status)**
    - ✓ It is a platform where modern technology is used to assist effective patrolling, assess ecological status, and mitigate human-wildlife conflict in and around tiger reserves.
    - ✓ The MSTrIPES program uses Global Positioning System (GPS), General Packet Radio Services (GPRS), and remote sensing, to collect information from the field, create a database using modern Information Technology (IT) based tools, analyze the information using GIS and statistical tools to provide inferences that allow tiger reserve managers to better manage their wildlife resources.
  - **Conservation Assured|Tiger Standards (CA|TS):**
    - ✓ CA|TS is a set of criteria that allows tiger sites to check if their management will lead to successful tiger conservation. CA|TS is organized under seven pillars and 17 elements of critical management activity.

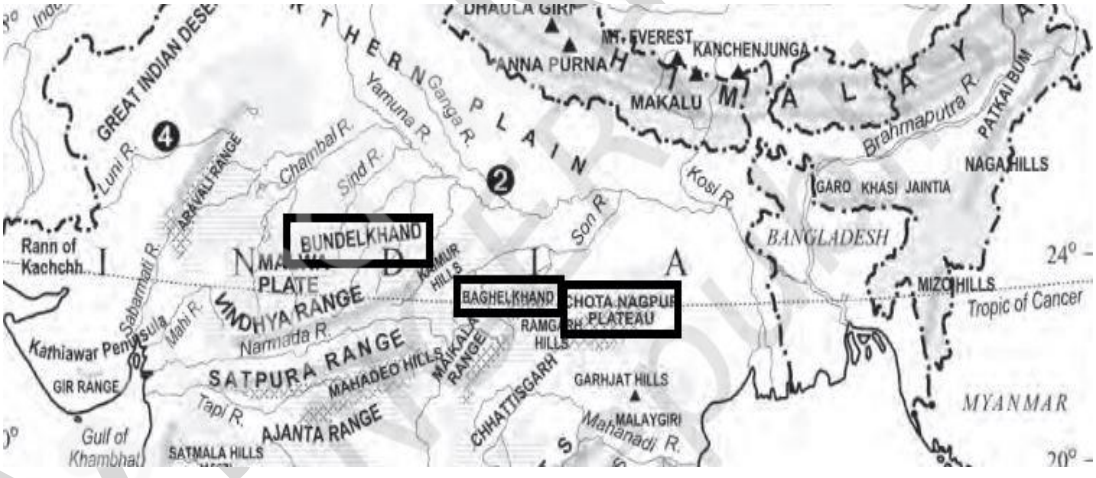
- ✓ CA|TS was developed by tiger and protected area experts. Officially launched in 2013, CA|TS is an important part of Tx2, the global goal to double wild tiger numbers by the year 2022. The long-term goal of CA|TS is to ensure safe havens for tigers.

- **CaTRAT (Camera Trap data Repository and Analysis Tool):**
  - ✓ It is an image processing software used for organizing and geotagging photo captures. It uses neural networks and image recognition, to classify them into individual species.

- **Some other technologies used for Tiger census:**
  - **Extract Compare:** This allowed the wildlife experts to 'fingerprint' tigers and identify individual tigers by their stripe patterns by comparing images in the database**.** Individual identification of tigers and leopards is done using these pattern recognition programs.
  - **Spatially explicit capture-recapture (SECR) method:** It is used to estimate population density from camera trap data.
  - **Cytochrome-b marker:** genetic analysis, Genomic DNA was extracted and samples were screened for species identification.
  - **Maximum Entropy Models (MaxEnt):** In some north-eastern states with logistical concerns based on photos taken within small intensively searched areas, habitats. **Hence option (d) is the correct answer.**

**Q 98.A**

- **Bundelkhand,** a historic region of central India, now included in northern Madhya Pradesh state, comprises the hilly Vindhyan region, cut by ravines, and the northeastern plain.
- **Baghelkhand** is a historical region in eastern Madhya Pradesh state, central India. The area is divided into two natural regions by the Kaimur Range. To the west lie elevated plains, and to the east is a rough, hilly tract intersected by a succession of parallel forested ridges of the Vindhya Range.
- **Chota Nagpur,** the plateau in eastern India, in northwestern Chhattisgarh and central Jharkhand states. The plateau is composed of Precambrian rocks. The Chota Nagpur plateau in its entirety lies between the basins of the Ganges (Ganga) and Son rivers to the north and the Mahanadi River to the south.




- From the above figure, the correct order from east to west is 2-1-3. **Hence, option (a) is the correct answer.**

**Q 99.C**

- In the system of flexible exchange rate system, the exchange rate is determined by the forces of market demand and supply. **The exchange rate is influenced by the demand for our exports in the foreign country, speculation in foreign exchange, etc. Hence option (c) is the correct answer.**
- Consider the following scenario to understand the link between foreign exchange and exports:
  - Let us assume, for simplicity, that India and the United States are the only countries in the world so there is only one exchange rate to be determined. **The demand curve (DD) is downward sloping** because a rise in the price of foreign exchange will increase the cost in terms of rupees of purchasing foreign goods. Imports will therefore decline and less foreign exchange will be demanded.
  - **For the supply of foreign exchange to increase as the exchange rate rises, the foreign demand for our exports must be more than unit elastic,** meaning simply that a one percent increase in the exchange rate (which results in a one percent decline in the price of the export good to the foreign

country buying our good) must result in an increase in demand of more than one percent. If this condition is met, **the rupee volume of our exports will rise more than proportionately to the rise in the exchange rate,** and earnings in dollars (the supply of foreign exchange) will increase as the exchange rate rises.

**Q 100.D**

- **Chirand** is an archaeological site on the banks of river Ganga in the Saran district of Bihar. It is the **first known site of the Neolithic age.** It has a large pre-historic mound (a rounded mass projecting above a surface) containing various artifacts.
- Archaeological evidence of circular huts and small-scale cultivation of wheat, rice, peas, etc have been found here. This evidence suggests that it is **a Neolithic site.** One of the peculiar characteristics of this site is its abundance of bone tools.
- **Hence option (d) is the correct answer.**

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